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Evolution of Drug Policy, Part II

In this issue, which is a continuation of the Journal's exploration of evolving drug policies throughout the world, subject experts will examine the history and evolution of drug policy, as well as the strategies, concerns and problems associated with drug prevalence and use. The policies of Canada and Switzerland are discussed as well as specific issues relating to US drug policies.

The article on Canadian drug policy, addresses the issues and problems associated with illicit drug use and substance abuse in Canada, but focuses specifically on how drug policy has been influenced by activism co-mingling with academia, research, professional and public authority. The resulting politicization of national drug policy is examined.

The report on the role of the physician with relation to "medical marijuana" makes the point that in states allowing liberal cannabis distribution to patients with various medical conditions; there is little scientific evidence to guide this process in a rational, ethical manner that ensures patient health and safety. This report examines the circumstances that led to this situation and explores the scientific issues involved in moving toward a resolution. It also offers recommendations to assist physicians in coping with these issues and proposes policy recommendations.

Also included in this issue is a report on a study suggesting that drug testing improves workforce productivity and attendance. The study further indicates that workers' compensation incidence rates and employee turnover are lowered after implementation of a drug testing program.

The last article in this issue provides a critical review of the process employed in the U.S. to make decisions on scheduling of drugs, with comparison to the corresponding processes in Europe, the U.K., Canada, Australia, and New Zealand.

The commentary offered by a noted expert on Switzerland's drug policy describes the history of drug policy in Switzerland since the 1980s, specifically the three pillars: Prevention, Therapy, and Law Enforcement. He lays out how the concept of Harm Reduction, the 4th pillar introduced by drug liberalizers, became the focus of drug policy in Switzerland as the Country coped with a drug addiction problem of nearly epidemic proportions. He concludes that Harm Reduction policies have been and continue to be problematic, resulting in high drug use rates remaining steady in Switzerland.

Our second commentary piece focuses on lessons learned from America's experience with alcohol prohibition. The author describes the facts and issues relating to past alcohol prohibition and compares and contrasts them to drug prohibition and policy.

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Employee Drug Testing: Study Shows Improved Productivity and Attendance and Decreased Workers' Compensation and Turnover

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S. Evren Esen and Laura Shelton**

Abstract

Human resource professionals were asked about their organizations' drug testing programs and reported the following perceptions after the implementation of a drug testing program: One-fifth (19%) of companies experienced an increase in employee productivity after the implementation of a drug testing program, employers with high absenteeism rates (more than 15%) reported a drop from 9% to 4% after implementing a drug testing program, an improvement of 56%; companies with high workers' compensation incidence rates (more than 6%) reported a drop from 14% to 6% after implementing drug testing programs, an improvement of 57%; and 16% of companies reported a net employee turnover decrease. Additional research needs to be conducted to further confirm these findings, but this initial pilot study suggests that drug testing has a positive impact in companies creating a more productive, safe, and stable workforce.

Keywords

Drug testing, absenteeism, worker's compensation incidence rates, productivity, employee turnover, human resources, pre-employment, for cause, random, mandated

Introduction

Drug testing of employees is a relatively new tool used in the last 20 years for evaluating candidates for employment and to promote safety in the workplace. Drug testing as we know it today, did not exist prior to 1980. However, in 1981 the crash of a Navy jet on the USS Nimitz aircraft carrier resulted in the death and injury of scores of enlisted men. Unfortunately, drug testing revealed the presence of drugs in not only that aircraft carrier's personnel but widespread in the military (1, 2). This led to a series of investigations and President Ronald Reagan issuing Executive Order 12564, mandating a drug free federal workplace. Seven years after the crash and extensive study, the

Mandatory Guidelines for Federal Workplace Drug Testing was published in 1988 (3). This provided the United States with the framework for establishing drug testing, not only for federal employees, but contractors and non-mandated industries as well. It is now widely acknowledged that the United States has the most extensive, medically confidential, and well-designed drug testing program in the world and has set the standard for drug testing globally.

As the mandated drug testing program for federal employees developed in the early 1990s and the legal and technical challenges for drug testing were all successfully met, drug testing was embraced by non-mandated industries such as retail and construction. The non-mandated testing spread using, as its basis, the Federal mandated program elements that were proven in the field for years.

However, since the international financial crisis there have been questions about the return on investment for drug testing leading some companies not to implement a drug testing program. These questions persist at the same time close to a trillion dollars a year are lost to drug abuse in our nation alone and the benefits of drug testing to help stem this loss are consistently reported (4, 5, 6, 7, 8).

Unfortunately, there has not been any research in this area for over a decade so the Drug and Alcohol Testing Industry Association (DATIA) funded a project to obtain the current opinions of human resource professionals about drug testing. DATIA felt this study was important to understand why some companies still do not have drug testing programs when the data generated by the Quest Return On Investment calculations suggest that a drug testing program provides a significant return on investment (9, 10). Also, with the U.S. drug abuse epidemic spreading away from conventional street drugs such as heroin, marijuana and cocaine to pharmaceuticals, designer drugs, synthetic drugs such as bath salts and spice the employee drug abuse problem will only grow in the future. This shift has been documented and followed since early 2000 by the Office of National Drug Control Policy and Justice Department, and an action plan has been developed to address this growing problem (11). Unfortunately there has been little research on the cost benefits of establishing a drug testing program over the past decade (12, 13, 14, 15). In order to address this question, DATIA commissioned the Society for Human Resource Management (SHRM) to help with the design of the study and the tabulation of the findings outlined in this report. The study was conducted from March 1st to March 14th, 2011.

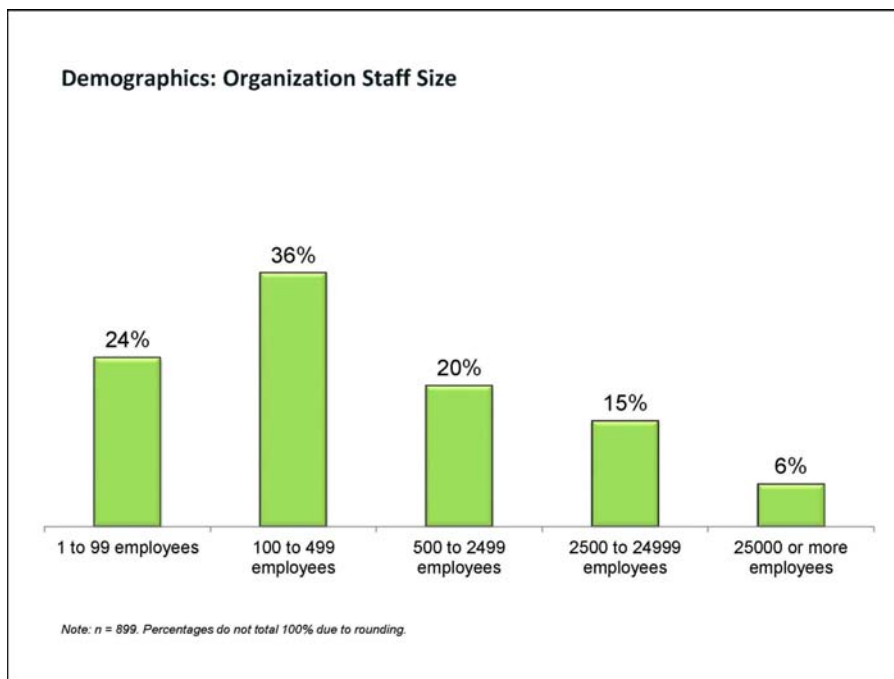
Survey Methods

A series of multiple choice questions were developed by DATIA and further refined by SHRM. These questions were then put into a web based survey tool and sent to a sample of 6,000 randomly selected human resource professionals from SHRM's membership of approximately 250,000 members. A response rate of 20% was achieved, with 1,058 human resource professionals participating in the poll; the margin of error for the poll is +/-3%.

Population Demographics

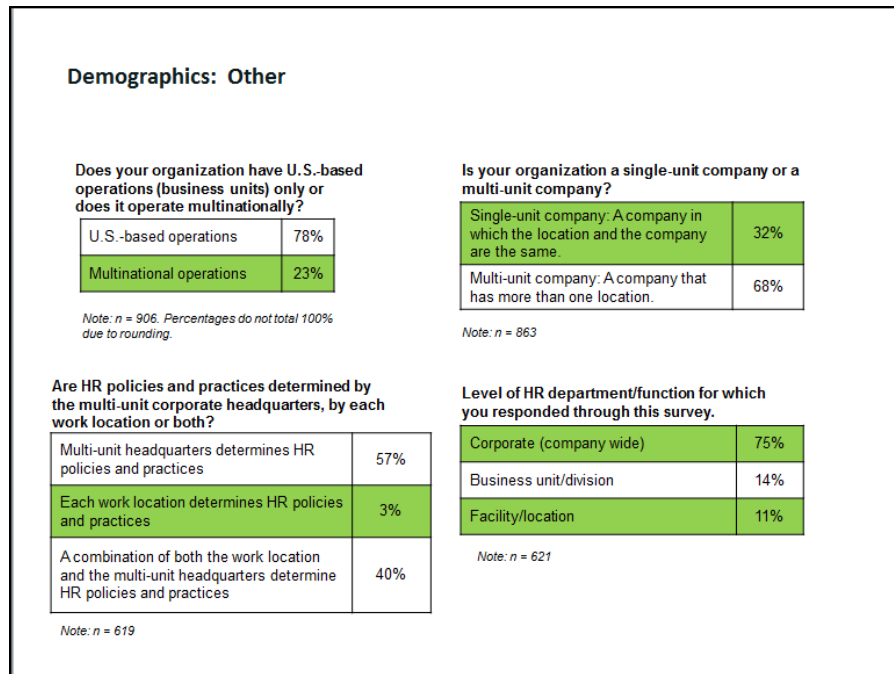
The majority (80%) of the respondents worked in organizations of 2,500 employees or less (see Figure 1): More than one-third (36%) had 100-499 employees, nearly one-quarter (24%) had 1-99 employees, and one-fifth (20%) had 500-2,499 employees. One-half (50%) of the responders' organizations, were publicly owned for-profit companies, 19% were from privately owned for-profit companies and 19% were from nonprofit organizations. The largest proportions of organizations were from the manufacturing (18%) and health care (14%) industries.

Figure 1 Demographics of the Study



Seventy-eight percent of the responding human resource professionals were from U.S. based companies, of which 68% had multiple locations and 23% had international operations. It was interesting to note that 75% of the respondents provided information not simply for their division but companywide (see Figure 2).

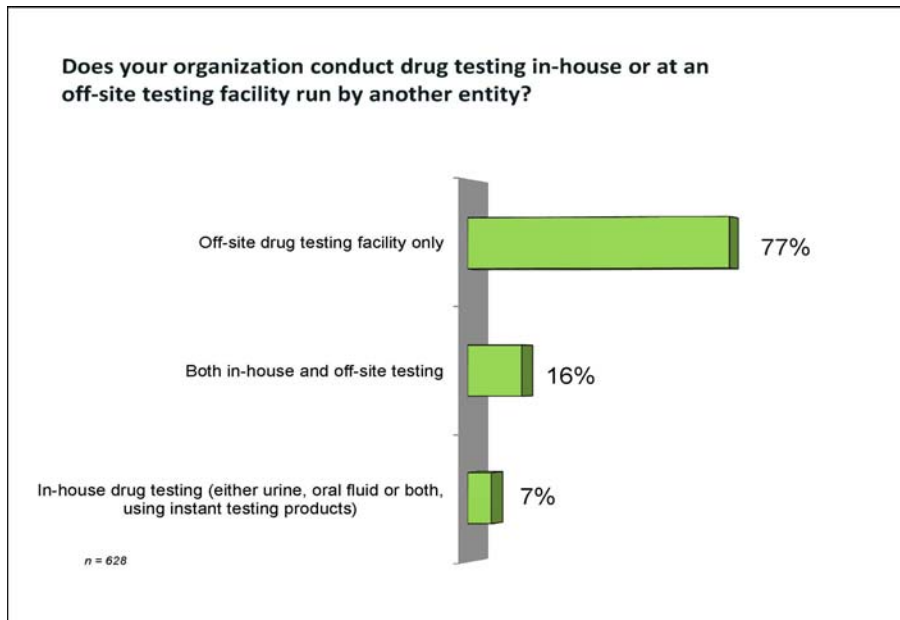
Figure 2 Detailed Company Demographics



The majority of responding human resource professionals to the survey were either decision makers (41%) or those that make recommendations (29%) concerning the drug and alcohol testing programs in their company. We decided to include those individuals that were not directly involved in the policy formation, as they may have perceived effects prior to and after the implementation of a drug and alcohol policy. We looked at the data both ways and did not find a significant difference. Our group determined that including all respondents in the survey was the most appropriate measure of the human resource impact of drug testing in a company. Although some individuals may not have had an impact on policy, they might have seen its effects directly in the workplace.

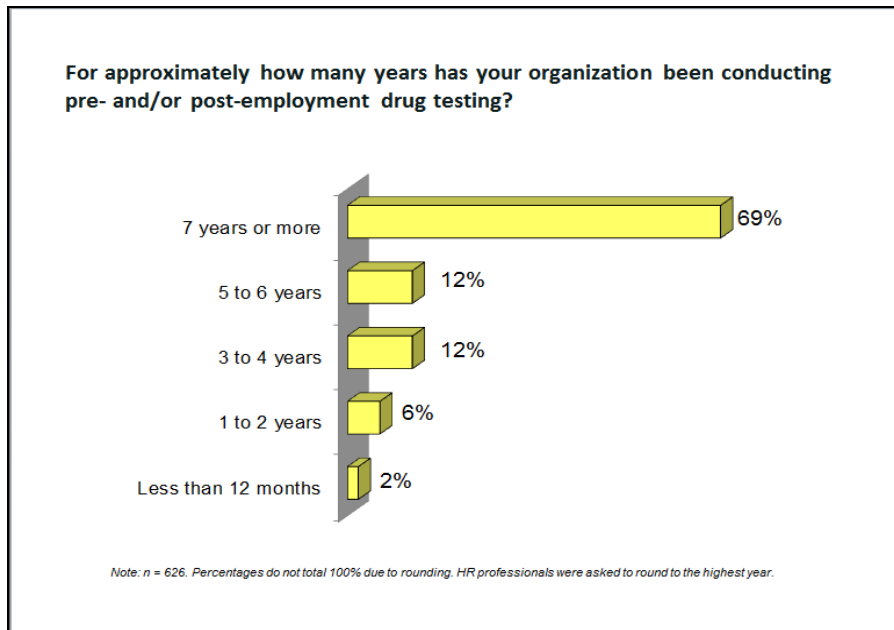
The majority of organizations (77%) continue to use off-site drug testing facilities for both collections and testing, while a smaller number of companies (16%) continue to use a combination of both in-house and off-site testing. Despite the reported increase in the use of in-house drug testing (either urine, oral fluid or both, using instant testing products), this number represents the smallest group at 7% (see Figure 3). However, this data does provide an excellent baseline for future surveys and will allow us to track trends and changes in how companies approach drug testing as new products and regulations evolve.

Figure 3 Responding Human Resource Professional



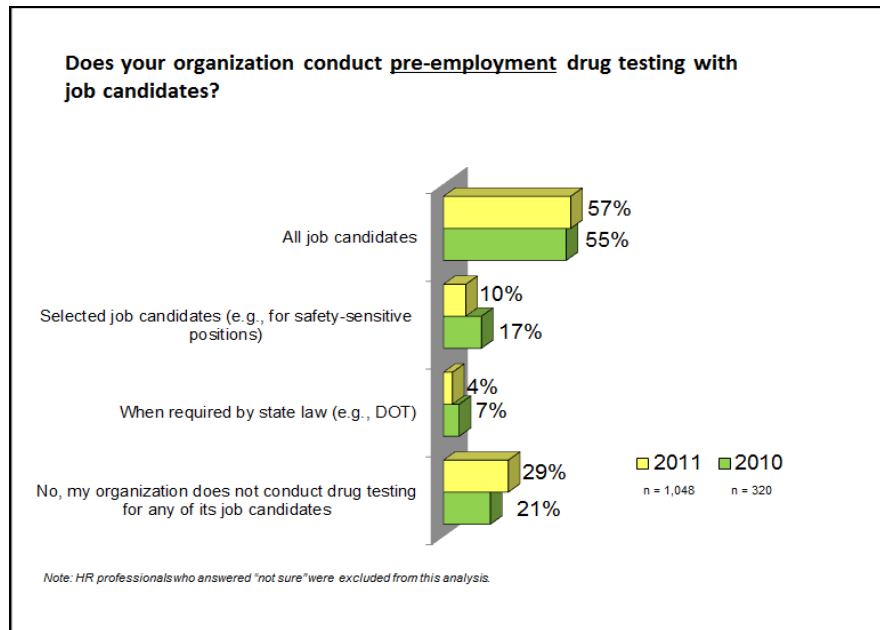
The majority of human resource professionals who responded to the study (69%) had programs in place for seven (7) years or more (see Figure 4). This suggests that those companies who started drug testing programs stayed with the programs for one reason or another. Outside this study, when asked why companies have drug testing programs, some say it ensures a better quality of worker, less absenteeism, and fewer accidents. Although difficult to quantify, this study confirms the perceived benefits of maintaining a drug testing program among human resource professionals responding to this study.

Figure 4 The Length of Time Companies Drug Tested



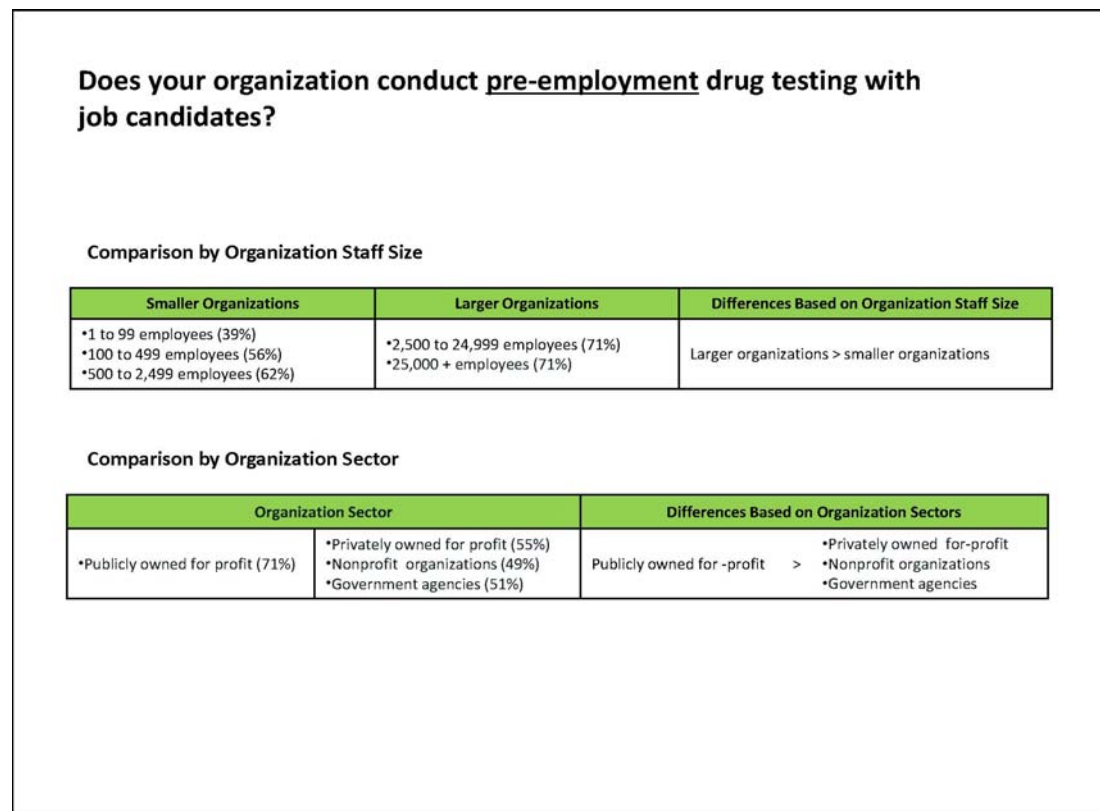
When asked if pre-employment testing was done prior to hiring an individual, a majority (57%) reported they test for job candidates, a slight increase in 2011 vs. 2010. The remaining categories of pre-employment testing, (selected candidates only, and positions required by state law) indicated a decrease in testing in 2011 vs. 2010 perhaps due to the slowdown in the economy. Thus, in 2011, 71% of respondents reported some category of pre-employment drug testing. However, the percentage of respondents who reported that their organizations do not conduct any pre-employment testing rose from 21% in 2010 to 29% in 2011. The companies were not asked the reasons as to why they did not drug test, but several reported that they did not believe in drug testing (see Figure 5).

Figure 5 Pre-Employment Drug Screening



Although it was clear that human resource professionals from large organizations, (those with greater than 2,500 employees), reported that 71% had pre-employment drug testing programs, only 51% of human resource professionals from the government sector, reported using pre-employment drug testing for all job candidates (see Figure 6). As all Federal government and most state and local governments have drug testing requirements, this report seems low and may simply be a reflection of not knowing the policy, or due to some confusion as to whether this question should have been phrased to reflect safety sensitive positions. Again, we included those human resource professionals not involved with the drug testing policy or program implementation, and this may simply be an artifact of that inclusion.

Figure 6 Pre-employment Testing by Organizational Sector



Human resource professionals responding to the types of post-employment testing conducted by their organizations reported that post accident and random testing were the most unchanged from 2010 to 2011, along with follow up testing. Post accident testing is required under many government and private sector programs, and random testing has been shown to be the greatest deterrent of drug abuse on the job (11, 12, 13, 14, 15). This gives employees a reason to “just say no” as employees do not know when they will be asked to provide a specimen for drug testing. It is interesting to note that reasonable suspicion testing dropped precipitously from 80% in 2010 to 35% in 2011. This could be a result of employees knowing there is a reasonable suspicion policy in effect or that pre-employment drug testing has created a more responsible work force. Follow up drug testing for those who have been identified as drug abusers also dropped, which may be a consequence of the post accident and random drug testing programs. Site and baseline testing are rare and not usually performed unless there is a credible reason to believe a significant drug problem, such as trafficking, is occurring in a specific workplace (see Figure 7).

Figure 7 Types of Drug Testing

| Which of the following post-employment drug tests does your organization conduct? | | |
|--|-------------------|-------------------|
| Drug Test Used | 2011 (n = 313) | 2010 (n = 222) |
| Post-accident testing (administered to all employees who are or may have been involved in a workplace accident) | 51% | 69% |
| Random testing (conducted on an unannounced basis using a neutral selection process and has the highest deterrence and detection impacts; a certain portion of the employee population is randomly selected periodically throughout the year) | 47% | 46% |
| Reasonable suspicion testing (occurs when an employer has reason to believe that an employee is under the influence of drugs and/or alcohol) | 35% | 80% |
| Follow-up testing (conducted during and after an employee has been referred to an employee assistance or other rehabilitation program) | 20% | 30% |
| For-cause testing is based on indicia that an employee may have a substance-abuse problem (e.g. excessive absenteeism, performance problems, dramatic mood swings, etc.). | 19% | * |
| Site testing (based on suspicion of a significant drug-abuse problem—e.g., based on employee complaints—at a specific work site and involves testing of all employees at that site on a one-time basis) | 8% | 13% |
| Baseline testing (conducted to establish the level of drug use at implementation of a program; this method essentially “cleans house” to establish a drug-free workplace) | 6% | 22% |

*Note: Percentages do not total 100% due to multiple responses.
 ** indicates question was not asked.*

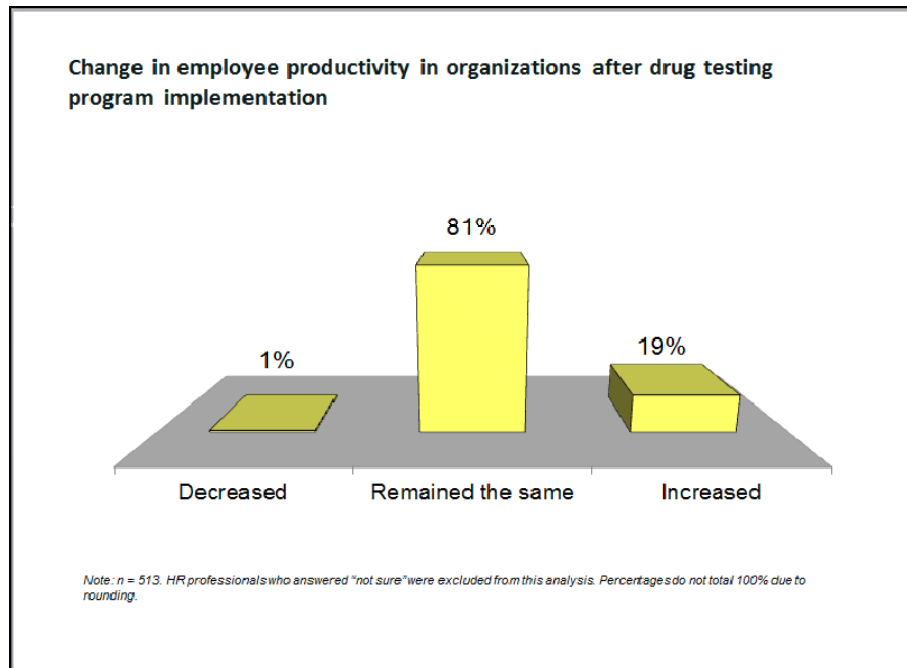
Perceived Impact of Drug Testing in the Workplace

The human resource professionals surveyed perceived a positive impact on four areas in the workplace: productivity, attendance, workers’ compensation incidence rates, and employee turnover.

Productivity is a difficult metric to gauge but is related to attendance, accidents, and employee turnover. Higher levels of absenteeism, accidents, or turnover can be directly related to lowered productivity in the workplace overall. This is because company energy is directed not on producing products or services but rather on compensating for employee attendance accidents and turnover.

In our study, nearly one-fifth (19%) of the human resource professionals reported a perceived increase in productivity after the implementation of drug testing program (see Figure 8). This again could be related to a more stable workforce and employee energy directed to specific job performance. Put into financial terms this could result in increased profits with the same workforce, an important consideration in today economic slowdown.

Figure 8 Employee Productivity After Implementing Drug Testing



Absenteeism is a major burden on employers, especially small businesses, where there are fewer resources available to fill in for the absent employee. This often results in decreased output, performance and profits for the company who has chronic high absenteeism. One of the early findings of implementation of drug testing programs was the decrease in absenteeism (14). There are many explanations as to why this benefit may be caused by a drug testing program but the classic explanation is a better quality of employee who does not “call in sick” on Mondays. Employees that are using illicit drugs or abusing prescription drugs are less productive, tend to miss work more often, may steal from the company, and are prone to more accidents. Companies reporting low absenteeism rates (0-15%) increased by 5% after implementing drug testing programs. This was one of the questions in the survey that had one of the lowest responses (n=162 and n=218 respectively) and suggests that this is one measurement that companies have a hard time correlating to drug testing, when their absentee numbers are relatively low. However, when the absenteeism of the company was greater than 15%, the implementation of a drug testing program showed a reduction in absenteeism from 9% to 4% (see Figure 9). This strongly suggests that when absenteeism is greater than 15%, a significant portion of this absenteeism is related to drug use/abuse and that the implementation of a drug testing program significantly impacts absenteeism.

Figure 9 Employee Absenteeism After Implementing Drug Testing

| Absenteeism rates at organizations before and after drug testing program implementation | | |
|---|--|---|
| | Before implementation of a drug testing program (n = 162) | After implementation of a drug testing program (n = 218) |
| 0-15% | 91% | 96% |
| More than 15% | 9% | 4% |

Note: HR professionals who answered "not sure" were excluded from this analysis.

Several state and private insurance companies provide decreased workers' compensation premium rates for companies who have a drug testing program, as they know it will decrease accidents and their costs associated with claims. This is especially true in companies that have high rates of workers' compensation claims, greater than 6%. The study participants reported a decrease in workers' compensation incidence rates from 14% to 6% (among organizations with workers' compensation incidence rates greater than 6%) after implementation of a drug testing program or an improvement of 57% (see Figure 10). This can result in significant saving for company, not only in insurance rates, but the consequences of accidents on the job from human resource, fiscal, and legal perspectives.

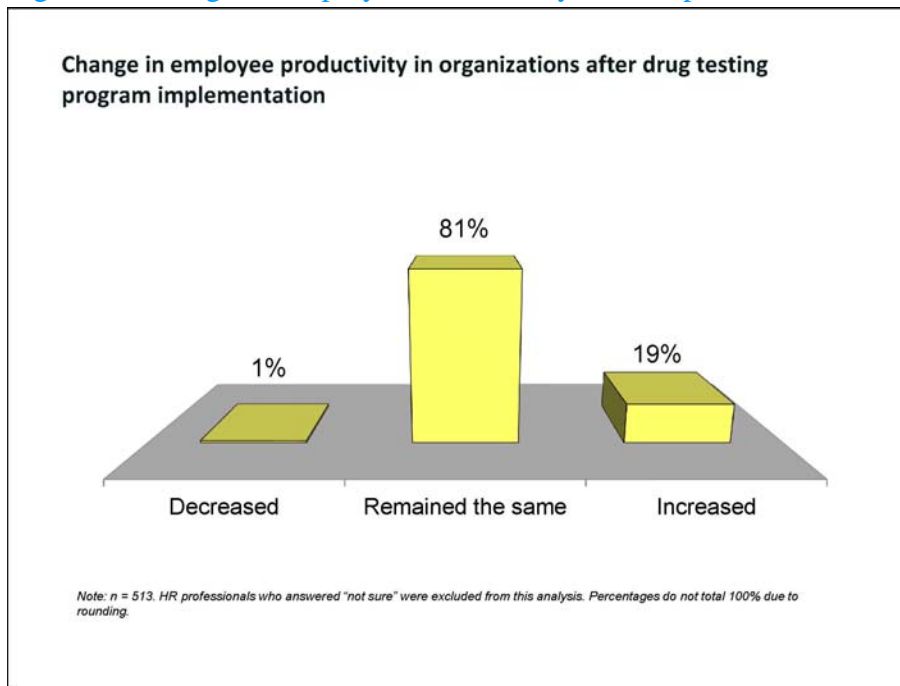
Figure 10 Workers' Compensation rates after Implementation of Drug Testing

| Workers' compensation incidence rates at organizations before and after drug testing program implementation | | |
|---|--|---|
| | Before implementation of a drug testing program (n = 255) | After implementation of a drug testing program (n = 312) |
| 0-6% | 86% | 94% |
| More than 6% | 14% | 6% |

Note: HR professionals who answered 'not sure' were excluded from this analysis.

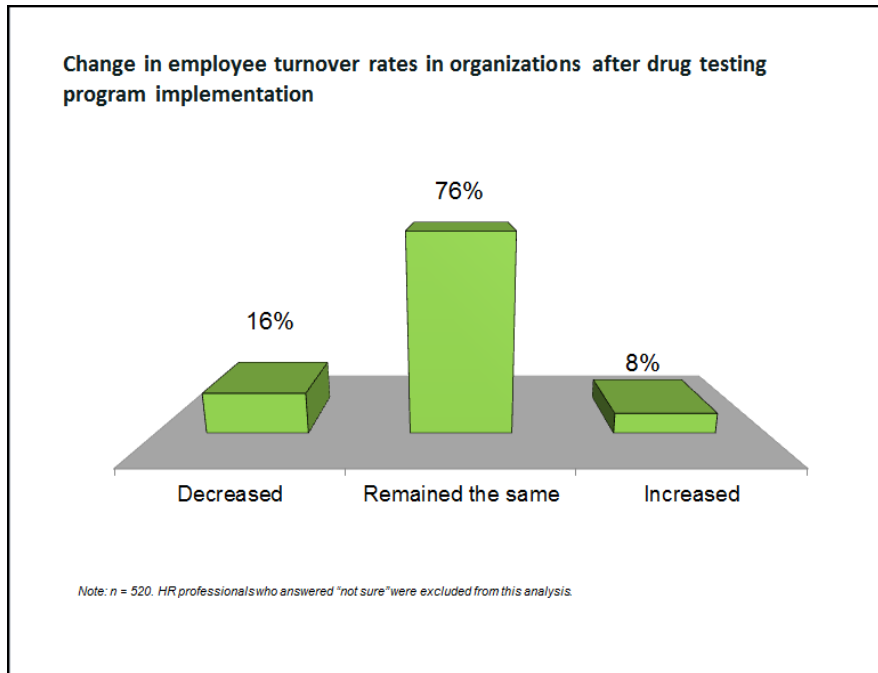
Productivity may be one of the most desirable aspects to measure in a workplace, as this indicator often translates directly to the bottom line of the company. While productivity measurements will vary significantly from one industry to another, it was interesting to note that 19% of the organizations reported an increase in productivity following the implementation of a drug testing program (see Figure 11).

Figure 11 Change in Employee Productivity after Implementation of Drug Testing



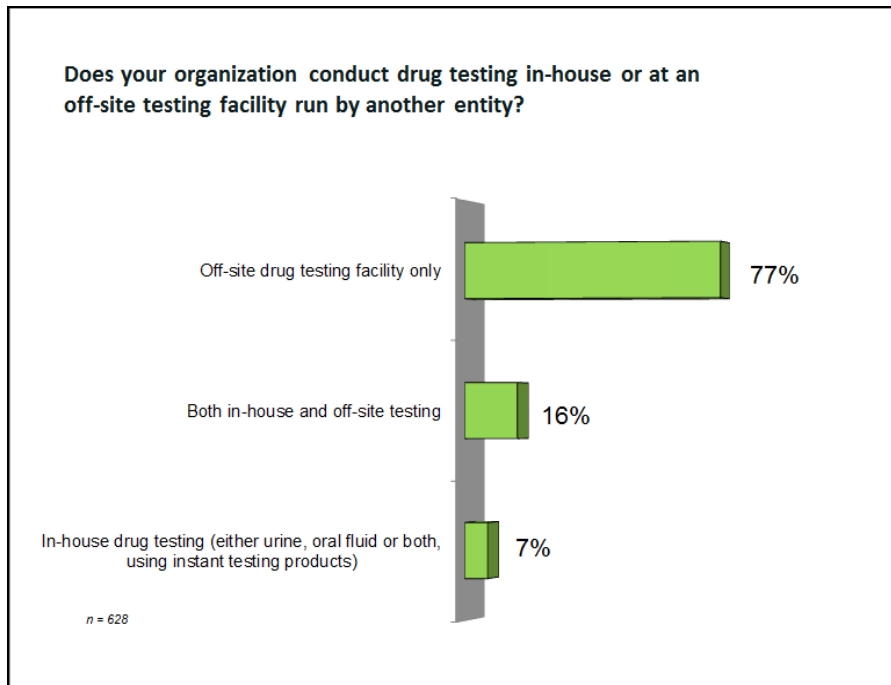
It costs an average of over \$5000 to replace a worker, more as the qualifications and skill sets increase. Turnover of the workforce in any organization is a timely and costly component that can be controlled by hiring a better quality of worker. One of these improved qualities is a worker that is drug free and does not have drug abuse behaviors that often carry over to the workplace such as high turnover. Human resource professionals reported a 16% decrease in employee turnover once a drug testing program was implemented, 8% saw an increase in turnover which could have been the result of drug abusing employees seeking other employment, and 76% reported no change. This suggests that drug testing helps to create a more stable work force and lowers recruitment training and other associated costs with on boarding new employees (see Figure 12).

Figure 12 Change in Employee Turnover after Implementation of Drug Testing



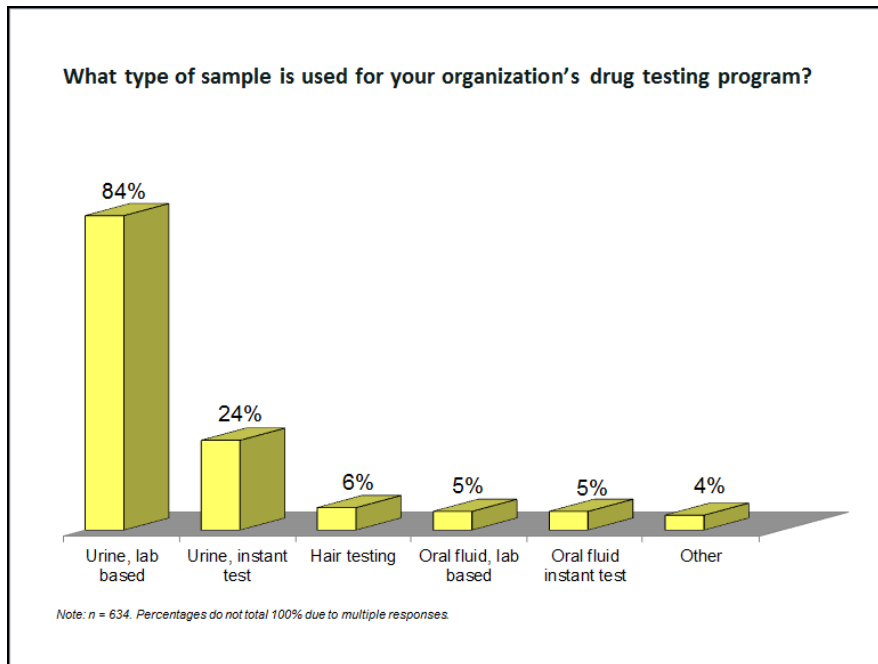
The industry has developed reliable instant drug testing devices for urine testing, so in the study we asked to know if companies were moving away from off-site laboratory based testing and moving toward in-house instant testing. There are higher costs associated with employees going for drug tests off-site, time waiting for the test and other associated costs. However, human resource professionals reported that 77% still used off-site laboratory facilities to collect specimens and test for drugs. Only 23% used a combination of off-site and in-house testing (see Figure 13).

Figure 13 Where Drug Testing is Done



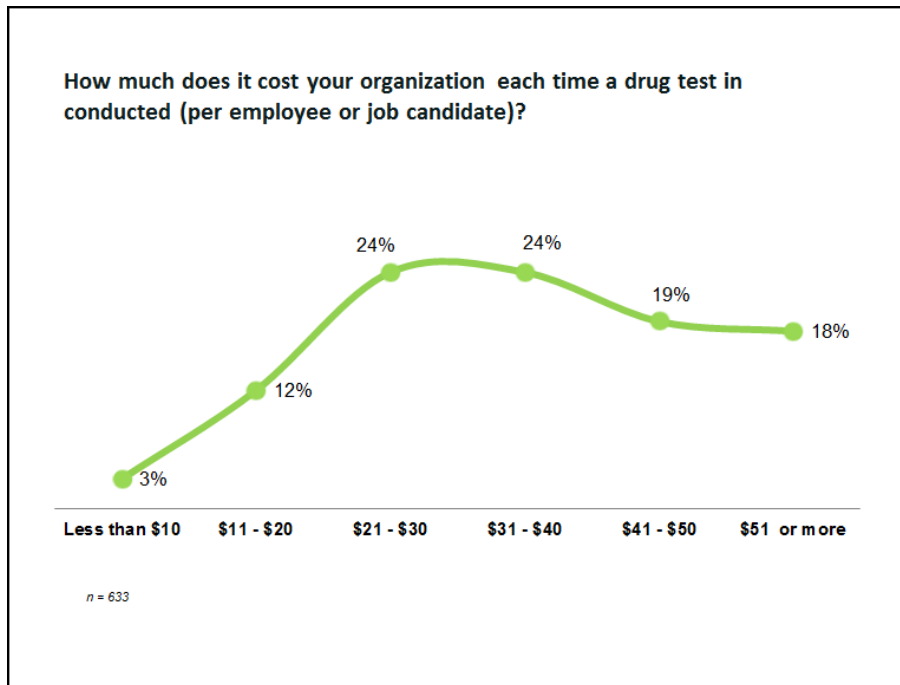
When companies were asked what type of drug testing sample they used, the human resource professionals responded that 84% used urine as the sample of choice, with the test performed in an off-site laboratory. Only 24% responded that they used instant urine tests, only 6% used hair testing, and 5% used instant or off-site laboratory oral fluid tests (see Figure 14). This was surprising as the availability and interest in on-site instant drug testing devices (urine and saliva) have been steadily increasing. Respondents did not use these new technologies, but rather, used more traditional laboratory based urine tests.

Figure 14 Drug Testing Samples



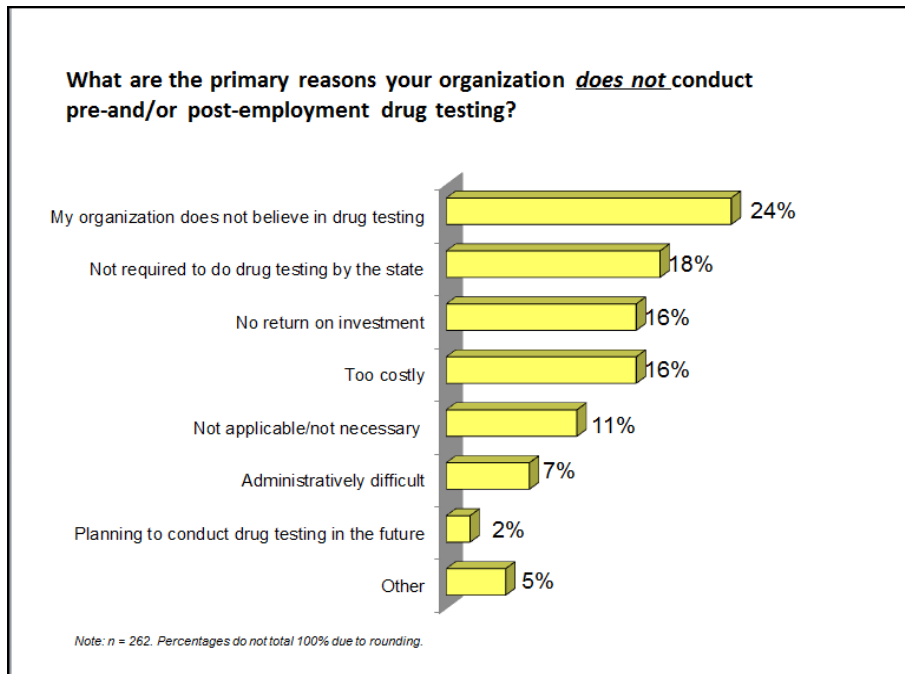
As expected the average price for a drug test reported by the majority of respondents (67%) ranges between \$20-\$50. This would vary depending upon the drugs being tested, collection and shipping fees, and Medical Review Officer (MRO) services. The low end cost of \$10-\$20 reported by 15% of the respondents was most likely in-house instant urine tests (see Figure 15). This is interesting data as the price for a drug test nationally is about \$40 all inclusive of specimen collection, testing, and MRO services, suggesting our respondents are accurate in their responses for this question and potentially all others.

Figure 15 Drug Testing Costs



Probably the most interesting responses were from those human resource professionals whose organizations did not conduct drug testing. Twenty-four percent of the responders said the primary reason was that their organization did not “believe” in drug testing. We did not get more information from this group, but this intriguing response begs for more information. Did they not believe in the increased productivity, lower absenteeism, accidents and turnover, as reported by those who conduct drug testing? Or did they not believe in drug testing because they viewed it as an infringement of personal rights. The next highest reason, 18%, is that drug testing was not required by the state or government, which is a good reason to have such legislation. The next two responses of 16% were “no return on investment/too costly” suggesting that this is an area that needs to be better educated by the drug testing industry. The remaining responses also indicate that education about the applicability of drug testing and administrative ease at 7% played some role in why the organization did not conduct drug testing (see Figure 16).

Figure 16 Why Organizations Do Not Test For Drugs



Conclusion

The majority of human resource professionals surveyed in this brief study report that their organizations have a drug testing program; furthermore a majority of those respondents report some perceived benefits in reduced absenteeism and workers' compensation claims, and increased worker productivity/performance. More than half of employers surveyed conduct drug tests on all job candidates, while only 29% do not conduct drug tests on any job candidates. In addition, most employers who use tests on job candidates have done so for seven years or more. When employers do post-employment drug tests, the most common tests are post-accident testing, random testing, and reasonable suspicion testing. The most notable benefits of workplace drug testing are as follows: improvement in productivity, a decrease in absenteeism rates, a decrease in workers' compensation incidence rates, and a decrease in employee turnover rates. More research is needed to fully document these initial finding but the significance is that it again documents the perceived benefits of drug testing as an effective cost management tool a decade after it was initially reported to do so in the workplace.

Author Information

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David M Martin, PhD is the author of over 100 publications, presentations and book chapters on substance abuse, drug testing and treatment. He has been involved with substance abuse research since 1973 while a research associate at Yale Medical School Department of Psychiatry. He is now the Scientific Director for the US State Department National Drug Abuse Survey in Afghanistan, a courtesy professor at the University of Florida Medical School Department of Psychiatry and Chairman of the Drug and Alcohol Testing Industry Association (DATIA).

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Laura Shelton is the Executive Director of the Drug and Alcohol Testing Industry Association (DATIA) where she manages and oversees all of the association's operations and programs. She has been involved in the drug and alcohol testing industry for over 14 years. Ms. Shelton works to ensure that DATIA represents the needs of its members and provides high-quality education, information, and resources to professionals involved in drug and alcohol testing and drug-free workplace programs.

Conflict of Interest

I declare that I have no proprietary, financial, professional or other personal interest of any nature or kind in any product, service and/or company that could be construed as influencing the position presented in, or the review of, the manuscript entitled “Drug Testing Improves Attendance and Productivity While Lowering Workers’ Compensation Incidence Rates and Employee Turnover”

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References

Irving J. Drug testing in the military--technical and legal problems. Clin Chem. 1988;34:637-40.

Sunshine I. Mandatory drug testing in the United States. Forensic Sci Int. 1993;63:1-7.

Mandatory Guidelines for Federal Workplace Drug Testing. Department of Health and Human Services (US). Federal Register. 1988;53:11970.

Zwerling C, Ryan J, Orav EJ. Costs and benefits of pre-employment drug screening. JAMA. 1992;267:91-3.

Drug Abuse and Addiction: One of America's Most Challenging Public Health Problems [Internet]. National Institute on Drug Abuse (US). [cited 2011 Jun 26]. Available from: <http://archives.drugabuse.gov/about/welcome/aboutdrugabuse/magnitude/>

Results from the 2008 National Survey on Drug Use and Health: National Findings [Internet]. Rockville (MD): U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration; 2009 [cited 2011 Jun 26]. Available from: www.oas.samhsa.gov/NSDUH/2k8NSDUH/2k8results.cfm#LOF

Acquilano N. The Economic Impact of Alcoholism and Drug Abuse: The Costs of Substance Abuse to Businesses, Consumers and Taxpayers [Internet]. Suite101; 2008 Dec 22 [cited 2011 Jun 26]. Available from: http://alcohol-abuse.suite101.com/article.cfm/the_economics_of_alcoholism_and_drug_abuse#ixzz0xOJodyP5

8. Shoveling Up II: The Impact of Substance Abuse on Federal, State and Local Budgets [Internet]. New York (NY): Columbia University, National Center on Addiction and Substance Abuse; 2009 May [cited 2011 Jun 26]. Available from: <http://www.casacolumbia.org/articlefiles/380-ShovelingUpII.pdf>

9. Drug Testing Return on Investment Calculator [Internet]. Quest Diagnostics; 2009 [cited 2011 Oct 12]. Available from: www.employersolutions.com/roi

10. Drug Testing Index [Internet]. Madison (NJ): Quest Diagnostics; 2009 May 6 [cited 2011 Oct 12]. Available from: http://www.questdiagnostics.com/employersolutions/dti/2009_05/dti_index.html

11. National Synthetic Drugs Action Plan [Internet]. Executive Office of the President of the United States, Department of Justice; 2004 Oct [cited 2011 Oct 12]. Available from: https://www.ncjrs.gov/ondcppubs/publications/pdf/national_synth_drugs.pdf

12. The 1995 AMA Survey: Workplace Drug Testing and Drug Abuse Policies. New York (NY): American Management Association; 1995.

13. Walsh JM. Is workplace drug-testing effective: Let's see the data! (Guest editorial). American College of Occupational and Environmental Medicine, MRO Update; 1995 Oct.

14. Cook R, Schlenger W. Prevention of Substance Abuse in the Workplace: Review of Research on the Delivery of Services. J Prim Prev. 2002;23:122.

15. Roman P, Blum T. Employee Assistance Programs and Other Workplace Interventions. In: Galanter M, Kleber H, editors. The American Psychiatric Press Textbook of Substance Abuse Treatment, 2nd ed. Washington, DC: American Psychiatric Press; 1999. p. 423-435.

To Schedule or Not to Schedule: How Well Do We Decide?

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Abstract

Legalization debates often focus on marijuana or marijuana and the rest of the “big four” (cocaine/crack, heroin, and methamphetamine), but decisions to ban non-medical use by “scheduling,” or prohibiting a substance by listing it on national legislation, a substance are made on an ongoing basis for new or emerging substances (e.g., K2 or spice, mephedrone, etc.). Some literature is highly critical of certain of these decisions. This paper reviews the process used by the U.S. to make scheduling decisions, based on (1) the outcomes for all 137 substances regulated under the Controlled Substance Act between 1971 and 2010, (2) comparison with processes and outcomes for some other developed nations, and (3) its adherence to or departures from general principles espoused in the management and decision sciences literatures. While possible improvements are suggested, the overall conclusion of this paper is that the sky is not falling; the scheduling decision processes work more often than not.

Introduction

The U.S. and other nations implement international treaty obligations by placing controlled substances on one of several “schedules”. New substances emerge on an ongoing basis, raising the questions of whether, when, and how to schedule (prohibit) each emerging substance. This paper critically assesses the process employed in the U.S. for making scheduling decisions, with comparison to the corresponding processes in Europe, the U.K., Canada, Australia, and New Zealand.

Some decisions have been sharply criticized, most commonly when substances perceived as posing minimal risk, are placed in “Schedule I” alongside very dangerous substances such as heroin. Our approach is not to focus on a few scheduling decisions in detail; that risks selection bias. When decisions are made under uncertainty – which is inevitably the case with newly emerging substances – even good processes sometimes produce decisions that lead to bad outcomes (1). Rather, we draw on the record of all federal scheduling decisions made in the U.S. between 1971 and 2010, and also ask whether the decision processes meet or violate basic tenets of the decision sciences. For example, a core concept in sequential decision-making is avoiding premature commitment, if deferring a decision allows one to gather information that will increase the likelihood of making the right decision. That suggests there

may be value in allowing temporary scheduling decisions. Some, but not all, countries have provisions for temporary scheduling; we look at the U.S. in particular to shed light on whether temporary prohibitions are ever reversed.

There are several strands that exist in the literature on scheduling. One addresses so-called ‘legal highs’ that fall between the cracks of existing prohibitions (2,3,4,5,6). A worry is that advancing technology is creating loophole-exploiting chemicals at an ever increasing rate, dooming the current scheduling system to a fruitless game of whack-a-mole (7,8).

The second strand argues that scheduling decisions ought to be grounded more firmly in scientific evidence (9,10,11). Evidence-based scheduling advocates want a “fully scientifically-based” classification system that accurately reflects the relative harm of substances (9,11). These sentiments appear to be motivated by three concerns: (1) law enforcement agencies may have a professional bias toward seeing drugs only as sources of problems, while under-valuing potential benefits, (2) the political process may be unduly influenced by moral considerations, and (3) non-scientists lack expertise and are vulnerable to being swayed by drug scares. An infamous example was Jacqui Dean, a Member of New Zealand Parliament, who was duped into asking the Expert Advisory Committee on Drugs whether the country should ban dihydrogen monoxide, more commonly known as water (12).

A third strand of the literature pertains to early warning systems (13,14,15) that seek to provide policy makers with timely and reliable information with which they can “make evidence-based decisions and plans that can minimize the public health risk and other potential harms of drug use” (16). The present paper seeks to complement the existing literature by focusing on the decision process rather than analyzing the wisdom or folly of one or a few particular decisions.

Description of Current Scheduling Decision Process

The International Treaties and Current Scheduling Structure

Two international treaties address the processes for bringing substances under control: The Single Convention on Narcotic Drugs, 1961, as amended in 1972 (Single Convention), and the Convention on Psychotropic Substances, 1971 (1971 Convention). (The 1988 Convention Against Illicit Traffic in Narcotic Drugs and Psychotropic Substances extends them, and includes precursor chemicals.)

Both treaties group substances into categories, or schedules, which are associated with different regulatory and control requirements. Though the particulars differ, both require consultation with the World Health Organization Expert Committee on Drug Dependence (WHO) (17). The WHO reviews harms and potential benefits, or more narrowly, the “degree of usefulness in medical therapy”, and makes a scheduling recommendation (17,18,19,20). If, after reviewing the WHO recommendation, the U.N. decides to schedule a substance, each Member State must adopt the decision and regulate the substance with at least as much stringency as is required by the U.N. (19,20). As a result, Member States have created legal frameworks through which U.N. regulated substances can be controlled, and those frameworks have characteristics in common with the treaties and each other (21).

Although each country’s provisions differ, most evaluate substances based on the same factors when making scheduling decisions: dependence and abuse potential, social and public

health implications, and medical use (22,23,24). Non-medical benefits such as performance enhancement (e.g., with steroids), roles in religious practice, and pure hedonic value are not considered.

The primary way substances are controlled is by adding them to a list of controlled substances (25). Different countries put different people or agencies in charge of scheduling decisions. Some require legislative action, some require approval of one or more Ministers, and some leave the decision to a government agency (25).

In the U.S., the process is governed by the Controlled Substances Act or CSA (22). The CSA tasks the Attorney General with scheduling substances (22), with understanding that this responsibility is delegated to the Drug Enforcement Administration (DEA). Putting an enforcement agency in charge of scheduling is atypical among the 29 countries we examined, which included the U.S., U.K., Canada, Australia, New Zealand, and many in continental Europe, in addition to the E.U. collectively.

Many countries have a mechanism for bringing scientific and/or medical evidence into the decision process. Some require consultation with an external scientific body, while others charge a separate governmental organization with conducting a risk assessment (22,25). In some cases, risk assessments are not mandated by law but are done in practice.

In the U.S., the DEA/Attorney General must request a scientific evaluation from the Secretary of the Department of Health and Human Services, prior to making a decision (DHHS) (22). The Secretary's recommendations are binding in terms of medical and scientific factors, although the Attorney General can consider "other relevant data" in determining whether the substance warrants control or removal from the schedules. However, if the Secretary recommends that a substance not be controlled, the Attorney General is not permitted to control the substance (22).

The only time the U.S. Attorney General can schedule a substance without a recommendation based on the usual DHHS actions, is via temporary scheduling (22). That temporary scheduling expires automatically after 12 months (plus a potential 6 month extension which has been used for 92% of temporary scheduling actions). If the Secretary has not completed an assessment at the end of those 12 to 18 months, the Attorney General cannot permanently regulate the substance (22).

Analog and Generic Provisions for "Designer Drugs"

The number of truly new, emerging *classes* of chemicals is not large. However, many more chemicals emerge that are close cousins or "analogs" of substances that have already been scheduled. Sometimes these substances have been intentionally designed to be similar but not identical to a listed substance; hence the term "designer drugs". Often the innovations are made by chemists doing legitimate research, seeking superior therapeutics; much to the dismay of researchers, underground chemists usually "discover" drugs merely by reading the literature, not by inventing new compounds (26).

Regardless, designer drugs can be deadly (27). For example, in the early 1980s two lawyers produced a synthetic version of heroin called MPPP that was not technically illegal. Unfortunately, poor reaction temperature control led to batches of MPPP that caused permanent Parkinson's-like symptoms after as little as one use (28).

In reaction to MPPP, the U.S. supplemented the CSA with the Federal Analog Act of 1986, which controls substances that are “substantially similar in structure” and that induce a hallucinogenic or stimulant effect “substantially similar to or greater than” a Schedule I or Schedule II substance (29). However, there are no guidelines to determine what makes the chemical structure of one substance ‘substantially similar’ to another; rather, this distinction is left up to the courts. This vagueness has caused some problems for enforcement agencies and pharmaceutical companies. However, those selling for recreational markets also have a hard time knowing for sure whether they have succeeded in staying just inside the boundary of what is legal, and that uncertainty may perhaps be counted as something of a benefit. Usually clear rules are thought to be the most effective deterrents, but that may pertain more to impulsive deviance than the premeditated actions of people trying to skirt the boundary of the law.¹

Some countries take a different approach, employing “generic systems” (occasionally referred to as ‘catch-all clauses’). These extend control beyond listed substances to their isomers, salts, esters, and/or ethers, and define specific chemical alterations of the substance which are illegal (25). The advantage and disadvantage of generic relative to analog systems is that a trained chemist can determine whether a particular chemical compound is or is not banned. Canada, Australia, and New Zealand employ both analog and generic approaches, whereas Norway and Latvia, like the U.S., have only the analog rules. Twenty-one other countries in Europe have neither analog nor generic provisions, which may explain why the U.S. generally has had fewer problems with designer drugs than have some European countries.

Acts of Congress

The procedures just outlined can be circumvented by acts of Congress. Even though Congress typically consults the DEA and DHHS, the consultations are not binding. For example, both DEA and DHHS testified that the evidence did not warrant scheduling anabolic steroids above Schedule V (30). Despite this recommendation, Congress passed the Anabolic Steroids Act of 1990, which classifies anabolic steroids as Schedule III. Congress has also circumvented the scheduling process to regulate amyl nitrites, GHB, GBL, and ephedrine.

Track Record of Scheduling Decisions

Scheduling Actions Taken by the U.S. Since Passage of the CSA

The DEA website lists 226 Federal Register notices through which DEA added, deleted, or transferred substances between schedules since the CSA was enacted (31). We add to this list six recent or current actions (5-MEO-DMT was placed on Schedule I as of December 20, 2010, and five chemicals contained in Spice were temporarily scheduled as of November 24, 2010), and drop six for miscellaneous reasons. (Two clarified rather than established control, two exempted prescription use of Librax and Menrium (two previously scheduled substances), and two proposed actions that were never made effective.) Table 1 describes the number of actions that moved a substance from one status (indicated by the row) to another (indicated by the column).

The first row shows there were 142 actions that regulated a substance that was not regulated at the time of the scheduling action. They pertain to only 137 substances because five were scheduled twice. (MDMA, detropropoxyphene, and fenfluramine were scheduled, unscheduled, and then rescheduled. GHB was placed on both Schedule I and III, and anabolic

steroids were placed on Schedule III twice.) The 137 new substances include three that were regulated temporarily, but not permanently, and five that are currently temporarily regulated.

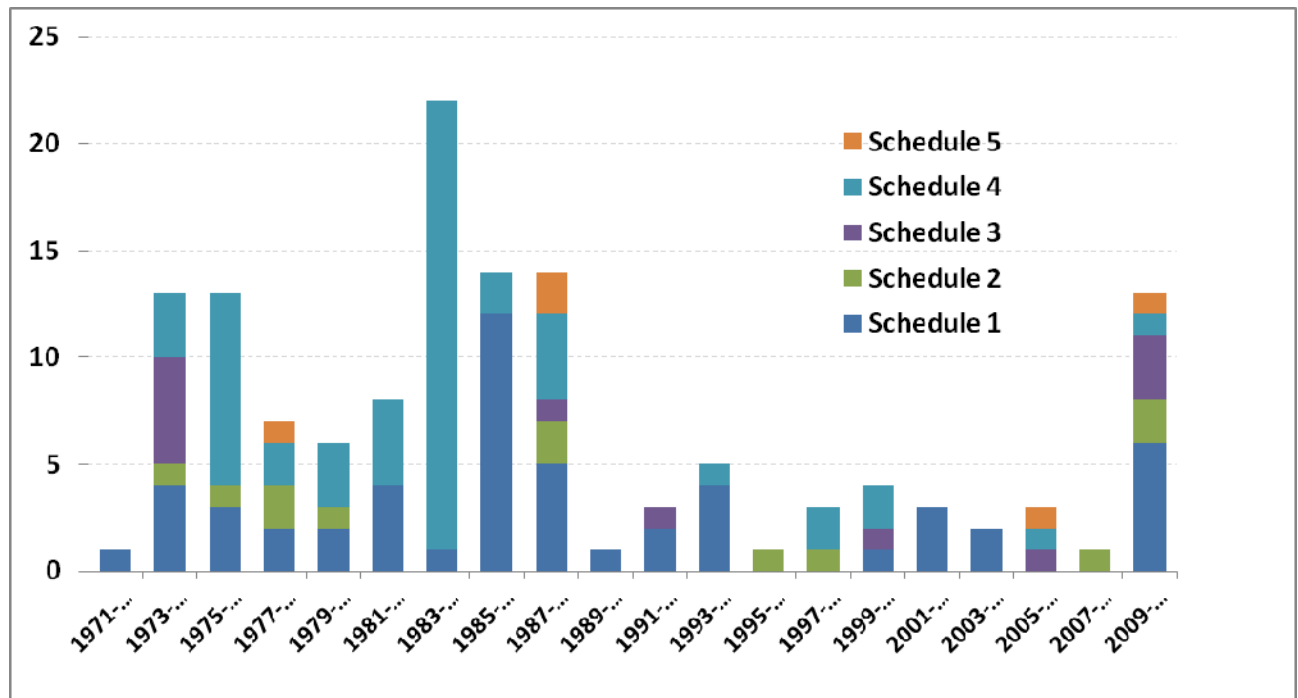
Forty-eight of the 226 actions pertained to substances that were on temporary schedule status, including 24 extensions and 22 moves to permanent Schedule I status. The remaining 36 revised the status of a substance that had already been permanently scheduled. Fifteen “up-scheduled” to a more restrictive status, mostly from Schedule III to Schedule II; 21 of the 36 “down-scheduled”, including 11 removals of a substance from the scheduling system altogether.

Table 1: Counts of Types of Scheduling Actions Taken by the U.S.

| | | To | | | | | | | | Total |
|------|---------------------------------------|------------------------------------|------------|----------------------|-------------------------------|-------------|--------------|-------------|------------|------------|
| | | Not Regulated | Schedule I | Temporary Schedule I | Extended Temporary Schedule I | Schedule II | Schedule III | Schedule IV | Schedule V | |
| From | Not Regulated | | 23 | 31 | | 12 | 14 | 57 | 5 | 142 |
| | Schedule I | 2 | | | | 5 | | 1 | 1 | 9 |
| | Temporary Schedule I | 2* (neither were separate actions) | | | 24 | | | | | 24 |
| | Extended Temporary Schedule I | 2* (1 was not a separate action) | 22 | | | | | | | 23 |
| | Expired Extended Temporary Schedule I | | 1 | | | | | | | 1 |
| | Schedule II | 7 | 1 | | | | 1 | | 1 | 10 |
| | Schedule III | | | | | 12 | | 1 | | 13 |
| | Schedule IV | | | | | 1 | | | | 1 |
| | Schedule V | 2 | | | | | 1 | | | 3 |
| | | | | | | | | | | 226 |

There have been reports implying that new substances are emerging at an ever increasing rate (7,8), but Figure 1 reveals an ongoing stream with a recent spike (mostly driven by the scheduling of 5 chemicals found in spice and a few substances that have medicinal value), not an ever-increasing crescendo. This is consistent with Griffiths et al.’s observation and contradicts the story that chemistry is swamping an antiquated system with an ever increasing number of designer drugs (32).

Figure 1: Number of Substances Scheduled Per Year in the U.S. (137 Total)
(Based on U.S. Department of Justice, 2010)



Potential Scheduling Decision Errors

A basic question to ask about scheduling is, were the right decisions made? Consider first the fundamental binary choice, to schedule or not. At this coarse level, there are two types of errors: “Type I” errors, when the process incorrectly rejects a null hypothesis that the substance does not merit scheduling, and “Type II” errors, when substances that merit prohibition are not scheduled or are scheduled only after considerable delay.

One can make “a dog not barking case” that there have been few Type II errors. All of the most widely abused substances were already controlled by the original CSA; no new substance has more than single digit “market share” at causing drug-related problems. For example, the Treatment Episode Data Set records about one million treatment admissions for which the primary substance of abuse was not alcohol.² Except for the “other opiates and synthetics” category, which includes fentanyl, the most mentioned newly emerging substances are benzodiazepines and PCP, with 1% and 0.4% of non-alcohol admissions, respectively. The traditional “big 4” (marijuana, heroin, cocaine/crack, and methamphetamine) are the primary substance of abuse in 90% of admissions (excluding those for which alcohol was primary).

The Drug Abuse Warning Network (DAWN) does record many “mentions” of emergency department episodes involving substances that have emerged since 1970, but they are predominantly diverted pharmaceuticals (e.g., benzodiazepines, oxycodone). Whereas heroin, cocaine/crack, and marijuana together receive over one million mentions per year, the leading emerging drugs that are on Schedule I appear far less commonly; counts for fentanyl (37,257), PCP (36,719), and MDMA/Ecstasy (22,816) are in the league with dermatological agents

(35,354) and laxatives (27,617).³ Annual counts for GHB (1,758) barely surpass *daily* counts for cocaine at 422,896 per year.

Type I errors are harder to count because they pertain to things not happening, e.g., a substance not being used as medicine, or not being used as often as it could be, because of overly restrictive scheduling. The counterfactuals are hard to identify, and we lack the medical expertise to judge whether something placed in Schedule III, for example, should really have been in Schedule IV or vice versa. All we can say is that Table 1 shows that substances do get moved from one schedule to another, and re-scheduling is not a one-way ratchet; there were more instances of reducing scheduling stringency than of increasing it (21 vs. 15).

What can be counted, are instances in which U.S. scheduling decisions depart from those of other countries with similar scheduling structures. We use as foils the U.K. and Australia, since their scheduling categories clearly indicate availability for use as medicine and their scheduling decisions are readily retrievable and published in English. Our focus is on adding substances to the most restrictive schedule because distinctions between different categories, that allow medical use, vary from country to country.

Table 1 shows the U.S. added 46 substances to Schedule I since the CSA passed. However, MDMA was added twice, and both alfentanil and sufentanil were initially added to Schedule I then demoted to Schedule II a few years later, leaving a total of 43 new substances that were permanently placed on Schedule I. Of them, at least 28 were regulated in some way by both the U.K. and Australia, and an additional 10 may have been, depending on how analog and generic provisions are applied. So both Australia and the U.K. recognized the need to regulate 65-88% of the 43 new substances. However, only 19 of the 28 substances were placed on the most restrictive list in both places.

Focusing on disagreements, it is clear for twelve of the 43 substances (28%) that either or both other jurisdictions do not place them on the most restrictive schedule. (See Table 2.) There are another twelve substances for which that statement might be true, depending on the interpretation of analog provisions (10 substances) or other ambiguities (2 substances).

Table 2: Substances Placed on Schedule I by the U.S. that Were Not Placed on the Most Restrictive Schedule in both Australia and the U.K.

| Substance | Australia | U.K. |
|--------------|------------------|------------------|
| 5-MEO-DIPT | Not regulated | Possible analog |
| Aminorex | Less restrictive | Less restrictive |
| AMT | Unknown | Not regulated |
| Difenoxin | Less restrictive | Less restrictive |
| Drotebanol | Less restrictive | Less restrictive |
| Fenethylline | Less restrictive | Less restrictive |
| GHB | Most restrictive | Less restrictive |
| Mecloqualone | Most restrictive | Less restrictive |
| NEA | Less restrictive | Less restrictive |
| Propiram | Less restrictive | Less restrictive |
| TCPy | Possible analog | Not regulated |
| Tilidine | Less restrictive | Less restrictive |

There are substances that other countries scheduled to some degree that the U.S. has not scheduled at all, as of December, 2010 (e.g., Salvia and 4-FMA by Australia; TFMPP, MDPV, and khat by both Australia and the U.K.). However, there is no substance that has been placed on the most restrictive schedule by another jurisdiction that the U.S. has opted to place on a less restrictive schedule. So, though other countries have regulated many of the same substances as the U.S., it seems that when the U.S. regulates a substance it tends to regulate it more restrictively than other countries.

Of course, agreement across countries is no guarantee of a correct decision; every country might be making the same mistake. Another, admittedly less objective, way to identify *potential* errors is simply to note which decisions have been criticized. That a decision has been criticized is not sufficient basis to conclude that an error has been made. However, the converse may hold; one might expect most errors to generate some protest, so identifying all decisions that have generated controversy gives a sort of upper bound on the number of errors.

Coulson and Caulkins (33) identify all instances in which there is an important constituency advocating for relaxing the status of a scheduled substance for reasons particular to that substance, as opposed to, say, generic calls for legalizing all substances (potential Type I error). A similar count is made of all instances for which there is a plausible basis for arguing that an unscheduled substance should be scheduled or was scheduled too slowly (potential Type II error). Even with such expansive criteria, the U.S. has made a maximum of 4 potential Type I errors (steroids, GHB, propiram, and MDMA) and 4 potential Type II errors

(salvia, spice, ketamine, and pseudoephedrine). (Note: Cannabis, psilocybin, and LSD are not candidates for Type I errors because they were already scheduled in 1970.)

Note again: We are not saying that there were this many errors. This is a list of substances for which ongoing debate indicates the possibility of an error. Whether an error has been made will inevitably remain a matter of judgment; but readers seeking to develop their own count of errors made can probably limit their search to these substances, on the assumption that all errors generate some degree of protest.

The number of true errors is possibly well below eight. Steroids and GHB were scheduled by acts of Congress; therefore, those actions cannot be attributed to the normal process. Propriam is a niche concern not frequently raised, and the main complaint about MDMA is not that it was scheduled, but rather that it should be in Schedule III, not Schedule I. Salvia has been controlled in other countries and by some individual states, but to date has not generated significant problems in the U.S. Likewise, spice has now been put under temporary scheduling; if it is subsequently scheduled permanently, the extent of the error would be a minor delay. Poison center case mentions for ketamine were rising rapidly before scheduling and fell thereafter, suggesting that perhaps quicker action would have been better. Yet even at its peak, ketamine never reached the levels of GHB, PCP, or LSD. Only pseudoephedrine, for which the delay in action was 20 years, looks like a truly strong candidate for being a Type II error. (And some might argue that it represents a different situation because it is a precursor, not the primary substance of abuse itself.)

So one summary would hold that: the scheduling decision process was seriously too slow once (pseudoephedrine), was overly restrictive once (MDMA), and may have had some minor misses, but otherwise the right decisions were made. That statement is striking given how sharply critical the literature is; yet we simply do not find empirical evidence for a belief that the U.S. scheduling system errs frequently.

One explanation may be that most criticisms pertain not to assessment of criteria identified in the Single Convention and 1971 Convention, but rather to criteria that the Conventions do not mention, such as potential pleasure or performance enhancing properties. Those could be valid criticisms of the policies and the treaties, but not of decision processes designed to implement policies congruent with the treaties. Hence we defer discussion of those issues to the following section.

Speed of Decisions

Speed matters, since drug epidemics can spread quickly (14). As Raiffa notes, solving a problem correctly but too late is itself a serious form of error (34). However, haste can also be wasteful if irrevocable decisions are made before adequate information is available.

It appears that when there is general agreement that a substance should be scheduled, the U.S. usually acts first. For example, there are 26 substances that were regulated explicitly (meaning not controlled only by an analog or generic provision) by at least three of the following four jurisdictions: U.S., U.N./WHO, U.K., and New Zealand. In 21 of these 26 cases the U.S. was the first to schedule (vs. three for UN/WHO, one each for the U.K. and New Zealand). Also, by the time international bodies called for the regulation of GHB, PMMA, 2C-B, and 4-MTA, each was already restricted in the U.S. (4-MTA and PMMA via the Analog Act). Such speed is not universal; some countries were quite slow to comply with

international standards. For example, the U.K. took 780 days to regulate GHB and Italy 279 days to regulate PMMA (4,31).

The U.S. may be able to move quickly because of its temporary scheduling option, which allows the DEA to act unilaterally, with DHHS review occurring during a 12 to 18 month temporary scheduling period. Then, after that period of reflection, the temporary action can be made permanent or allowed to expire. Among 29 (mostly European) countries, Germany and the Netherlands are the only others that have such “emergency” procedures. Sweden, Slovakia, Poland, Luxembourg, and Norway have so-called “rapid” procedures that can expedite the process whereby permanent scheduling decisions are reached (25).

Emergency scheduling procedures attempt to mitigate the risk of making an incorrect scheduling decision by delaying the final decision. How much additional information might policy makers expect to have after a 12 to 18 month delay? As a proxy, Coulson and Caulkins (33) examine counts of the number of articles published in the PubMed database before and after a substance was scheduled. They find that there is no such thing as a typical amount or a typical rate of accumulation of knowledge. Sometimes substantially more information becomes available during the delay. For example, during the 18 months that methcathinone was temporarily scheduled, three more scientific articles were published, versus just one when the temporary regulation was imposed. However, the same delay for methylaminorex yielded just one more article to add to the 19 that were already available. Six articles were published during the delay period for BZP, but delaying for yet another two years would have made an additional 13 articles available. And there were already large literatures even before the temporary regulation of ketamine (6,625) and ephedrine (4,815). Thus, the value of delay may vary from substance to substance, suggesting that the ideal duration of delay might too.

In theory, it is hard to argue with the wisdom of emergency procedures. They reduce the risk of a drug market expanding beyond a tipping point before action is taken (35). Less formally, they decrease the chance that paralysis of analysis will let Pandora’s Box be opened, when decisive action could have prevented a new drug from ever getting established. However, skeptics might worry that temporary scheduling is a mirage, with every temporary action inevitably becoming permanent.

The U.S. has taken 31 temporary scheduling actions since temporary scheduling was incorporated into the CSA in 1984. Three substances were dropped from controlled status when the temporary scheduling expired, 23 were placed in Schedule I, and five (components of ‘spice’) are still under review. Many of the 23 placed in Schedule I are also in the most restrictive class in other countries, although this is not always the case. For example, BZP was placed in a less restrictive schedule by New Zealand and the U.K, and AMT is not formally regulated by the U.K., Canada, Australia, or New Zealand.

Looking Beyond Treaty Criteria

The international treaties ignore factors that standard economic analysis would view as relevant to a comprehensive welfare analysis, so the number of Type I errors from a utilitarian perspective may exceed the number of Type I errors when looking through the lens of the treaties or corresponding national legislation.

Anabolic steroids are a familiar example. Some steroids are used to treat medical problems, for example, pituitary malfunction. Those benefits would be comprehended by the treaties.

However, steroids can also: (1) increase muscle mass and strength, (2) improve competitive performance, and (3) improve appearance. We are not asserting that a substance's potential to increase muscle mass, improve competitive performance, or improve appearance should be considered by the international treaties. Those are value judgments. What is a matter of fact not opinion, however, is that some people positively value these effects, in the sense that they would pay money or give up something else of value to attain them. Hence, these effects can reasonably be called benefits in those people's eyes.

Steroids are not the only substance that can enhance performance of people with no deficit or defined medical problem. Propranolol, a beta-blocker, is a useful example because it has not been caught up in the drug war debates and associated value judgments. Though propranolol is prescribed to combat hypertension (a deficiency), it is also used (off-label) to enhance performance of musicians by blocking anxiety while performing before a crowd (36). It appears to reduce hand tremors that are a natural response to anxiety, an effect that also seems to be valued by surgeons and competitive sharpshooters, given the frequency with which those groups report taking propranolol (37,38). Four points are worth making explicit. First, this use brings benefits to the user and, at least for the concert audience and surgeon's patients, others as well. Second, the benefits do not come from treating any medical condition or deficiency; these users are all elite performers. Third, the use is outside that which is approved by the regulatory regime. Fourth, if there were ever a debate about propranolol's schedule status, these benefits would be excluded from the discussion; the treaties' definitions of potential benefits omit such considerations completely.

Propranolol is not psychoactive, so it will presumably never be the subject of a scheduling decision. But it seems plausible that in the future "cosmetic neurology" will create psychoactive drugs that enhance performance of people who have no medical condition or deficit (39). Already ADHD medications, such as Adderall, are frequently used off label in hopes of improving concentration and endurance while doing knowledge work tasks. The 2009 National Survey on Drug Use and Health estimates that 6.75 million Americans have used Adderall off label; among college students, past-year prevalence of off-label use exceeded that of cocaine, LSD, or ecstasy.⁴ Some might dismiss cognitive enhancers as affecting only the relative performance of individuals on tests, advantaging those with access but harming others. However, to the extent that more knowledgeable people are more productive and successful members of society, the drug use could create positive not just negative externalities. Kleiman et al. (40) illustrate that idea with the hypothetical of a scientist who uses Adderall to prolong his or her workday, and, after years of hard work, discovers a cure for cancer.

MDMA has already been mentioned, but it is important to note that its proponents claim not only conventional medical benefits, such as treating mental illness (41), but also benefits that are not considered in the current scheduling criteria. For example, some have argued that MDMA may be useful in couples counseling (42).

The treaties also overlook potential use in religious acts. For example the Mazatec of Oaxaca, Mexico use hallucinogenic plants for religious purposes, including *salvia divinorum*. Other plants used by various religious groups include peyote, khat, kava, and certain types of cannabis. Some countries, like the U.S. and India, have made exceptions for substances necessary for certain groups to adhere to religious practices and have formulated work-around schemes (43,44).

Hedonic benefits are perhaps the most obvious and controversial category of benefits omitted from the international treaties' criteria. The widespread appreciation of alcohol's hedonic benefits may account for its not being a scheduled substance, and it is not the only psychoactive that produces hedonic benefits.

We are not arguing that extra-treaty benefits are sufficient to create what would be a Type I error in a larger social welfare sense for any particular substances. However, these examples illustrate the logical possibility of that occurring.

Assessing the Decision Making Processes

In addition to judging a tree by its fruit, one can also examine the tree itself. We teach policy analysis and decision analysis, so it is natural to hold up the current decision process against what we teach as touchstones of good decision making. The scheduling process gets a clean bill of health with respect to many of them. For example, the U.S. process looks good compared to Europe, in that it has some supplemental provision for addressing analog substances (avoids the trap of micromanaging via legislation and, thereby, having inflexible rules). Likewise, emergency scheduling procedures make sense vis a vis the notion of investing in the acquisition of additional information in order to make better decisions, and the related point that there is "option value" in preserving flexibility by delaying final commitment (1,45).

However, the scheduling process fares less well relative to some other decision systems, and in the interest of space we elaborate only those.

Consider all important attributes of a multi-attribute decision

A platitude of the decision making literature is that one should consider all relevant factors or attributes. The typical textbook example is reminding students not to automatically accept the job offering the highest salary; other factors (benefits, location, advancement potential, intrinsic pleasure of the job, etc.) should also be considered.

The previous section makes clear that scheduling processes do *not* consider all attributes that would be considered relevant by a standard welfare analysis. Indeed, they consider just two: potential for abuse (at the individual and societal level) and potential value as a medicine.

Achieving the best solution depends on creating alternatives, not just choosing wisely

Decision making textbooks note that a key to arriving at the best outcome is ensuring that a full set of options is being considered (46). Hence, a concern is that although there are multiple schedules, there is still an essentially dichotomous choice to schedule or not schedule. Transform (47), among others, argues that alternative regulatory options could be created that restrict or regulate as opposed to prohibit.

New Zealand explicitly recognized the potential for such a third option when, in 2004, it added a new 'class' of substances to its Misuse of Drugs Act of 1975 (48,49). At least until recently, New Zealand has only invoked this 'Class D' twice, for BZP and TMFPP,⁵ and in 2008 both were formally prohibited as Class C drugs (48). Evidence is mixed as to whether the time on 'Class D' status led to more or less harm. Proponents argued that BZP and TMFPP could potentially divert users from more dangerous substances like MDMA or amphetamine (50), but it is unclear as to whether they were actually substitutes or

complements for more harmful drugs (51,52). Sheridan and Butler (53) also suggest that Class D status “convey[ed] mixed messages ... [that] often le[d] to higher than ‘recommended’ doses”. Therefore, one might worry that existence of this “third path” has simply confused matters, and delayed reaching the right outcome.

The empirical evidence to date is insufficient (two substances in one country) to draw conclusions about whether the binary approach creates artificial constraints or is elegantly simple; so further research on the idea of creating “third paths” may be merited.

Systematic not Piecemeal Decisions

Systems analysis stresses that optimizing individual components may not optimize overall system performance. The ideal analysis considers the system as a whole, including indirect or feedback effects.

In the context of drug scheduling this would translate into jointly optimizing scheduling decisions for all substances simultaneously, because one substance can be a substitute or complement for another. The current scheduling process fails with respect to this desideratum, since drugs are generally evaluated on their individual risks and merits without consideration of how scheduling or not scheduling the drug in question might affect use of some other substance. Reliably predicting such interactions might be difficult, but that does not mean interactions are not important.

Pay Attention to Institutional Structures/Include All Stakeholders

All but the most pedantic policy analysis textbooks acknowledge that political, institutional, and cultural realities affect how bureaucracies make decisions (54,55). Well designed processes recognize these realities and account for them, e.g., by creating checks and balances, public hearing requirements, or other process controls.

Section 2 notes that the U.S. is atypical in putting an enforcement agency (the DEA) in the lead role. Some may be concerned that this biases the process in the U.S. toward prohibiting too many substances.

Inevitably this is something of a glass half empty, glass half full situation. However, our sense is that some have an exaggerated image of the DEA running roughshod over the process in a way that materially alters many scheduling outcomes. So we mention some facts that support a contrary view. (1) Two of the four leading contenders for being Type I errors were scheduled by acts of Congress, not via the normal process overseen by the DEA. (2) Not all substances that were temporarily scheduled were moved to permanent scheduling, and most that were permanently scheduled were also scheduled by other countries that do not have an enforcement agency managing the process. (3) The DEA has no announced plans to regulate *salvia divinorum* even though salvia has been the subject of considerable media hype and has been scheduled elsewhere. (4) Table 3 shows that 14 of the 39 (36%) substances on DEA’s list of ‘Chemicals of Concern’ are not scheduled in the U.S., and some, like salvia and khat, do not have any recognized medical benefit. So reflexive claims of the DEA’s consistently being overly aggressive may be exaggerated.

Table 3: Chemicals of Concern: Control Status and Medical Use, Count and Examples from Each Category (U.S. Department of Justice, 2010)

| | Medicinal Use | No Medicinal Use |
|-----------------------|--|--|
| Controlled | 14 , including Cocaine, Vicotin, OxyCotin | 11 , including LSD, Mephedrone, GHB |
| Not Controlled | 9 , including Tramadol, Soma, Kava | 5 , including Spice, khat, Salvia |

Conclusions

Our overall conclusion is that the sky is not falling. That may seem anti-climatic, but given the strenuous, sometimes even vitriolic, criticisms made in the literature, we frankly expected to come down decisively negative. However, the data show that, at least in the U.S., there has not been an ever increasing crescendo of new substances that is overwhelming the system. The U.S. tends to move more quickly than other nations when it comes to regulating, which may be a positive attribute given market tipping points. Further, there is considerable agreement across countries in scheduling decisions; where there is disagreement, the U.S. tends to control new substances more prohibitively, but there exist substances that other nations control that the U.S. does not.

The review does raise three concerns. First, the schedule structure does not now distinguish well between no known therapeutic use despite significant research vs. no known therapeutic use because there hasn't been time to do such research. Either way, the substance would be placed in Schedule I. It is possible to conduct medical research with Schedule I, but there are administrative hurdles that at least some believe inhibit responsible research (2, 56,57). Perhaps there would be value in adding an additional schedule, perhaps called Schedule IA, for substances with enough potential for abuse to merit scheduling and no currently accepted medical application, but for which proactive investigation of such potential benefits is actively encouraged in practice (e.g., via less burdensome regulations on medical research) not just in theory.

Second, technology may bring increasing numbers of performance enhancing substances whose benefits do not fit neatly into a medical model (39), and so challenge the current regulatory system.

Third, longer periods of temporary scheduling may sometimes be useful. Allowing quick action, while delaying a permanent decision, has considerable appeal. However, the amount and rate of accumulation of new information varies enormously across substances. So a single fixed duration of temporary scheduling for all substances may not be appropriate.

Notes

- ¹ A separate but presumably solvable problem with the U.S. Analog Act is language that restricts it to substances intended for human consumption. Some have sought to circumvent the Act by labeling a substance as ‘plant food’ or ‘not for human consumption’.
- ² Authors’ runs with TEDS-A (2008) data on the SAMHDA website (www.icpsr.umich.edu/icpsrweb/SAMHDA/).
- ³ DAWN counts from the online tool at <https://dawninfo.samhsa.gov/data/default.asp?met=All>. There were 37,430 mentions for “amphetamine”, which includes methcathinone, but SAMHSA (2004) reports that 90% of the mentions aggregated into that category were originally simply “amphetamine”, suggesting that methcathinone mentions are relatively uncommon.
- ⁴ Authors’ runs with 2009 National Household Survey on Drug Use and Health, available at <http://www.icpsr.umich.edu/icpsrweb/SAMHDA/>.
- ⁵ A recent article www.nzherald.co.nz/politics/news/article.cfm?c_id=280&objectid=10715958) suggests it may soon be applied to spice

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References:

1. Clemen RT. Making Hard Decisions. Boston: PWS-Kent; 1997.
2. Griffin OH, Miller BL, Khey DN. Legally High? Legal Considerations of Salvia Divinorum. J Psychoactive Drugs. 2008; 40: 183-191.
3. Winstock AR, Ramsey JD. Legal highs and the challenges for policy makers. Addiction. 2010; 105: 1685-7.
4. European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). [Internet] Legal responses to new synthetic drugs 2000-2004. [updated 2004; cited 2010 Oct 15]. Available from: <http://www.emcdda.europa.eu/html.cfm/index9941EN.html?>
5. Griffiths, P., Sedefov, R., Gallegos, A., Lopez, D. How globalization and market innovation challenge how we think about and respond to drug use: 'Spice' a case study. Addiction 2011; **105**, 951–3.
6. Sumnall, H.R., Evans-Brown, M., McVeigh, J. Social, policy, and public health perspectives on new psychoactive substances. Drug Test. Analysis 2011; **3**, 515–23.
7. Wohlfarth A, Weinmann W. 2010. Bioanalysis of new designer drugs. Bioanalysis. 2010; 2: 965-79.
8. Gay, M. Synthetic Marijuana Spurs State Bans. N.Y. Times. 2010 July 10. Available at: <http://www.nytimes.com/2010/07/11/us/11k2.html> (accessed 15 September 2010). Archived at: <http://www.webcitation.org/5ymOFK9x0> on 18 May 2011.
9. Nutt D, Kind LA, Saulsbury W, Blackmore C. Development of a rational scale to assess the harm of drugs of potential misuse. Lancet. 2007; 369: 1047-53.

10. Randerson J. Take decisions on drug classification out of politicians' hands, say advisers. *Guardian*. 2008 Nov 12. Available from:
<http://www.guardian.co.uk/science/2008/nov/25/illegal-drugs-classification>
11. Nutt D. Estimating drug harms: a risky business? Centre for Crime and Justice Statistics. Eve Saville Lecture. 2009 Oct. Available from
http://www.crimeandjustice.org.uk/opus1714/Estimating_drug_harms.pdf.
12. New Zealand Press Association. National MP falls victim to water hoax. 2007 Sept 13. Available from <http://www.stuff.co.nz/national/politics/38005>.
13. Griffiths P, Vingoe L, Hunt N, Mounteney J, Hartnoll R. 2000. Drug Information Systems, Early Warning, and New Drug Trends: Can Drug Monitoring Systems Become More Sensitive to Emerging Trends in Drug Consumption? *Subst Use and Misuse*. 2000; 35: 811-44.
14. Mounteney J. Methods for providing an earlier warning of emerging drug trends [dissertation]. University of Bergen; 2009.
15. Mounteney J, Fry C, McKeganey N, Haugland S. Challenges of Reliability and Validity in the Identification and Monitoring of Emerging Drug Trends. *Subst Use and Misuse*. 2010; 45: 266-87.
16. Mounteney J, Leirvåg S. Providing an Earlier Warning of Emerging Drug Trends: the Førre Var System. *Drugs Educ Prev Pol*. 2004; 11: 449-71.
17. World Health Organization (WHO). Guidelines for the WHO review of dependence-producing psychoactive substances for international control; 2000. Report No.: EB105/2000/REC/1. Available from:
http://www.cpdd.vcu.edu/Pages/Index/Index_PDFs/GuidelinesForTheWhoReviewOfDependenceProducingPsychoactiveSubstancesForInternationalControl.pdf.
18. Lande A. Commentary on the Convention of Psychotropic Substances. New York: United Nations; 1976.
19. Single Convention on Narcotic Drugs, 1961 as amended by the 1972 Protocol amending the Single Convention on Narcotic Drugs, 1961. United Nations; 1972.
20. Convention on Psychotropic Substances, 1971. United Nations; 1971.
21. Rosenqvist P. National Variations in Classifications. *Addiction*. 2010; 105: 1153-4.
22. Controlled Substances Act of 1970, 21 U.S.C. Sect. 811; 1971.
23. Misuse of Drugs Regulations 2001, Pub. L. 2001 No. 3998; 2002 Feb 1.

24. Scheduling and Policy Frameworks for Medicines and Chemicals, National Coordinating Committee on Therapeutic Goods; 2010 Jul 1.
25. Hughes B, Blidaru T. Legal Responses to New Psychoactive Substances in Europe. EMCDDA; 2009. Available from: <http://www.emcdda.europa.eu/publications/drugnet/online/2009/65/article12>.
26. Whelan J. In Quest for 'Legal High,' Chemists Outfox Law. Wall Street Journal. 2010 Oct 30. Available from: <http://online.wsj.com/article/SB10001424052748704763904575550200845267526.html>.
27. Nichols D. Legal highs: the dark side of medicinal chemistry. Nature. 2011; 469. Available from: http://www.nature.com/news/2011/110105/full/469007a.html?s=news_rss.
28. Kau G. Flashback to the Federal Analog Act of 1986: Mixing Rules and Standards in the Cauldron. U Penn Law Rev. 2008; 156: 1077-115.
29. Controlled Substances Act of 1970, 21 U.S.C. Sect. 813; 1988.
30. Legislation to Amend the Controlled Substances Act (Anabolic Steroids): Hearings on H.R. 3216 Before the Subcomm. on Crime of the House of Representatives Comm. on the Judiciary, 100th Cong., 2d Sess. (July 27, 1988).
31. U.S. Department of Justice: Office of Diversion and Control [Internet] Scheduling Actions: Alphabetical Order. [updated 2010 Sept 15; cited 2011 Jan 5]. Available from: http://www.deadiversion.usdoj.gov/schedules/orangebook/a_sched_alpha.pdf.
32. Griffiths P, Lopez D, Sedefov R, Gallegos A, Hughes B, Noor A, Royuela L. Khat use and monitoring drug use in Europe: The current situation and issues for the future. J Ethnopharmacology. 2010; 132: 578-83.
33. Coulson C, Caulkins JP. Scheduling of Newly Emerging Drugs: A Critical Review of Decisions over 40 Years. Addiction. Forthcoming 2011.
34. Raiffa H. Decision analysis: Introductory lectures on choices under uncertainty. MA: Addison-Wesley; 1968.
35. Caulkins JP, Reuter P. How Drug Enforcement Affects Drug Prices. In Crime and Justice –A Review of Research, vol. 39, ed. Michael Tonry. University of Chicago Press; 2010. 213-272.
36. Slomaka J. Playing with Propranolol. Hastings Cen Rep. 1992; 22: 13-17.

37. Elman MJ, Sugar J, Fiscella R, Deutsch TA, Noth J, Nyberg M, Packo K, Anderson RJ. The Effect of Propranolol Versus Placebo on Resident Surgical Performance. *Trans Am Ophthalmol Soc.* 1998; 96: 283-294.
38. Oransky I. [Internet] Why would an Olympics shooter take propranolol? *Scientific American.* [updated 2008 Aug 15; cited 2010 Sept 30]. Available from: <http://www.scientificamerican.com/article.cfm?id=olympics-shooter-doping-propranolol>.
39. Chatterjee A. The Promise and Predicament of Cosmetic Neurology. *J of Med Ethics*, 2006; 32: 110-3.
40. Kleiman MAR, Caulkins JP, Hawken A. *Drugs and Drug Policy: What Everyone Needs to Know.* Oxford University Press. Forthcoming.
41. Bouso JC, Doblin R, Farré M, Alcázar MA, Gómez-Jarabo G. MDMA-Assisted Psychotherapy Using Low Doses in a Small Sample of Women with Chronic Posttraumatic Stress Disorder. *J Psychoactive Drugs.* 2008; 40: 225-236.
42. Greer G, Tolbert R. 1986. Subjective reports of the effects of MDMA in a clinical setting. *J Psychoactive Drugs.* 1986; 18: 319-327.
43. American Indian Religious Freedom Act Amendments of 1994. H.R. 4230, 103 D Congress, U.S. Government Printing Office, Washington: 1994 Congressional Record 3. 1994.
44. Ray R, Dhawan A. Drug Scheduling – Science and Cultural Perspective. *Addiction.* 2010; 105: 1151-53.
45. Trigeorgis L. *Real Options: Managerial Flexibility and Strategy in Resource Allocation.* Cambridge: The MIT Press; 1996.
46. Keeney R. *Value-Focused Thinking: A Path to Creative Decision Making.* Harvard University Press; 1992.
47. Transform. [Internet]. Piperazines – how to regulate an emerging recreational drug not covered by existing legislation. *Drug Policy Briefing.* [updated 2006; cited 2010 Dec 4]. Available from: http://www.tdpf.org.uk/Policy_General_Piperazines.htm.
48. Misuse of Drugs Act 1975, Pub. L. 1975 No. 116; 1975 Oct 10.
49. Sheridan J, Butler R, Wilkins C, Russell B. Legal piperazine-containing party pills – a new trend in substance misuse. *Drug Alcohol Rev.* 2007; 26: 335-43.

50. Bowden M. [Internet] Call for BZP ban misses the point. STANZ. [updated 2005; cited 2011 May 10]. Available from: <http://replay.web.archive.org/20081123061019/http://www.stanz.org.nz/Call%20for%20BZP%20ban%20misses%20the%20point.pdf>.
51. Wilkins C, Girling M, Sweetsur P, Huckle T, Huakau J. Legal party pill use in New Zealand: Prevalence of use, availability, health harms and 'gateway effect' of benzylpiperazine (BZP) and trifluoromethylphenylpiperazine (TFMPP). Centre for Social and Health Outcomes Research and Evaluation (SHORE) and Te Ropu Whariki, Massey University: Auckland; 2006.
52. Theron L, Jansen K, Miles J. Benzylpiperazine-based party pills' impact on the Auckland City Hospital Emergency Department Overdose Database (2002–2004) compared with ecstasy (MDMA or methylene dioxymethamphetamine), gamma hydroxybutyrate (GHB), amphetamines, cocaine, and alcohol. *N Z Med J*. 2007; 120: U2416.
53. Sheridan J, Butler R. 'They're legal so they're safe, right?' What did the legal status of BZP-party pills mean to young people in New Zealand? *Int J of Drug Policy*, 2010; 21: 77-81.
54. March JG, Simon HA. *Organizations*. New York: John Wiley; 1958.
55. Wilson JQ. *Bureaucracy: What Government Agencies Do and Why They Do It*. Basic Books; 1989.
56. Pentney AR. An exploration of the history and controversies surrounding MDMA and MDA. *J Psychoactive Drugs*, 2001; 33(3): 213-221.
57. Engel P. Testimony Before the House Subcommittee on Oversight and Investigations of the 106th Congress (CIS NO: 00-H271-49). (March 11, 1999)

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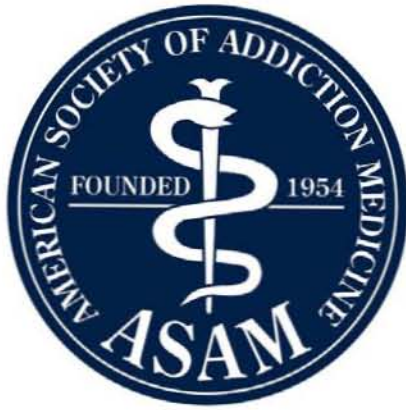
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The Role of the Physician in “Medical” Marijuana

September 2010

The Role of the Physician in “Medical” Marijuana

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Based on a literature review, consensus discussions, and a field review, the Action Committee developed a series of findings, conclusions and recommendations regarding the therapeutic value of smoked marijuana and the role of physicians in the prescribing of marijuana for medicinal purposes.

“The Role of the Physician in Medical Marijuana” is supported by the American Academy of Pain Medicine and the American Osteopathic Academy of Addiction Medicine.

September 2010

ABSTRACT

Objectives: Research into the therapeutic potential of cannabis and cannabinoids has lagged behind that of other modern medications. The recent discovery and elucidation of the endocannabinoid receptor system, coupled with improvements in technology and new research tools, has facilitated analytical, pharmacological, and other preclinical research. The conundrum in many states is that liberal cannabis distribution to patients with various medical conditions occurs in a setting where little scientific evidence exists to guide this process in a rational, ethical manner to protect patient health and safety. The purpose of this review is to examine the circumstances that led to this situation and explore the scientific issues involved in moving toward a resolution. It also sets out recommendations to assist physicians in coping with these issues and proposes policy recommendations for consideration that, if adopted, could reduce the potential for more problems in the future.

Results: Review findings indicate that in order to think clearly about “medical marijuana,” one must distinguish first between 1) the therapeutic potentials of specific chemicals found in marijuana that are delivered in controlled doses by nontoxic delivery systems, and 2) smoked marijuana. Second, one must consider the drug approval process in the context of public health, not just for medical marijuana but also for all medicines and especially for controlled substances. Controlled substances are drugs that have recognized abuse potential. Marijuana is high on that list because it is widely abused and a major cause of drug dependence in the United States and around the world. When physicians recommend use of scheduled substances, they must exercise great care. The current pattern of “medical marijuana” use in the United States is far from that standard.

Conclusions: All cannabis-based and cannabinoid medications should be subjected to the rigorous scrutiny of the Federal Food and Drug Administration (FDA) regulatory process. This process provides important protections for patients, making medications available only when they: 1) are standardized by identity, purity, potency and quality; 2) are accompanied by adequate directions for use in the approved medical indication; and 3) have risk/benefit profiles that have been defined in well-controlled clinical trials.

Key Words: cannabis, cannabinoid medication, medical marijuana

Executive Summary

Research into the therapeutic potential of cannabis and cannabinoids has lagged behind that of other modern medications. The recent discovery and elucidation of the endocannabinoid receptor system, coupled with improvements in technology and new research tools, has facilitated analytical, pharmacological, and other preclinical research. Clinical research is also increasing, although only a small number of controlled studies meeting modern scientific standards have been published.

All cannabis-based and cannabinoid medications should be subjected to the rigorous scrutiny of the Federal Food and Drug Administration (FDA)¹ regulatory process. This process provides important protections for patients, making medications available only when they: 1) are standardized by identity, purity, potency and quality; 2) are accompanied by adequate directions for use in the approved medical indication; and 3) have risk/benefit profiles that have been defined in well-controlled clinical trials. The FDA has set forth the criteria that must be met if a botanically-based medication is to achieve marketing approval through this process.

All major medical organizations support the FDA approval process. Both the American Medical Association (AMA) and the American College of Physicians (ACP) have rejected the use of state legislative enactments to determine whether a medication should be made available to patients. The Institute of Medicine has also rejected this approach and has called for further research into the development of nonsmoked, reliable delivery systems for cannabis-derived and cannabinoid medications. Rigorous research is needed better to understand the significance of different cannabinoid formulations and ratios, methods of administration, and dose-response relationships. Cannabis has a range of effects, some of which may be disturbing to patients with serious medical conditions, adversely impact their cognitive skills, or impair their lung function. Such effects should be better understood, particularly in the context of chronic medical use.

“Medical marijuana,” currently distributed pursuant to state legislation, does not accord with critically important aspects of the modern scientific model. It lacks quality control and standardization; can be contaminated with pesticides and microbes; and does not assure patients a reliable and reproducible dose. Increased cannabis potency heightens the risk of adverse events, especially among cannabis-naïve patients, as well as the dangers of dependence and addiction. There are no effective risk management measures to prevent diversion and abuse, especially by adolescents.

The practice of medicine must be evidence-based; all medical interventions should be justified by high-quality data. Despite the paucity of rigorous scientific data, dispensaries are now distributing cannabis and cannabis products to large numbers of

¹ Some individuals criticize the FDA as an imperfect, flawed system, but its process is the standard for medication approval in the United States. There is no rationale for carving out large scale exceptions to this review process. Any rationale offered loses currency when one considers the potential harm associated with increasing the availability of a substance with a high abuse liability.

individuals. Yet physicians, who are the gatekeepers of this process under state law, have inadequate information on which to base their judgment if they choose to discuss cannabis as a treatment option with their patients. Physicians should carefully consider their ethical and professional responsibilities before issuing a cannabis recommendation to a patient. A physician should not advise a patient to seek a treatment option about which the physician has inadequate information regarding composition, dose, side effects, or appropriate therapeutic targets and patient populations.

Introduction

During the past 40 years, popular interest in the therapeutic potential of cannabis has significantly increased, propagated by widespread media attention. Because cannabinoid research poses special challenges, data from such research have accumulated slowly and only recently have gained substantial attention within the scientific and medical communities. The conundrum in many states is: liberal cannabis distribution to patients with various medical conditions; little scientific evidence exists to guide this process in a rational, ethical manner which ensures patient health and safety. This report will examine the circumstances that led to this situation and explore the scientific issues involved in moving toward a resolution. It will also set out recommendations to assist physicians in coping with these issues and propose policy recommendations for consideration that are intended to reduce the potential for more problems in the future.

Modern History of Cannabis in Medicine

In the early part of the 19th century, the European medical community became aware of the therapeutic potential of cannabis-based medications. Dr. William O'Shaughnessy, an Irish physician, conducted clinical and nonclinical work in India with cannabis preparations and upon his return to England, the results of his studies became widely known. Across Europe and North America interest increased in the therapeutic potential of these materials. (O'Shaughnessy WB, 1973) Pharmacists and early pharmaceutical companies (Hamilton HC, Lescohier AW & Perkins RA, 1913) developed oral cannabis extracts and tinctures² for various medical conditions. These cannabis preparations were unstable and unreliable, however, because unlike opiates, cannabinoids are lipid-, rather than water-soluble, and sensitive to degradation by heat and light (Garrett ER, Hunt CA, 1974). Because of these characteristics, and the limited technology available at the time, the active ingredients in cannabis preparations were unknown, the preparations lacked standardization, and patient response was variable (Walton RP, 1928).

² Historically, cannabis was used for therapeutic purposes primarily in the form of teas, extracts, tinctures (grains of hemp/hashish resin dissolved in alcohol)—**not in smoked form**. Only in rare cases, involving respiratory conditions was cannabis inhaled. In the 1800s, the composition of this resin would have been about half THC and CBD (of its primary cannabinoids). (Russo EB, 2007). See discussion below.

Reports often blame the enactment of the federal Marihuana Tax Act of 1937, which imposed administrative limitations on the prescription of cannabis preparations,³ for the contraction in the use of marijuana in medicine. The main reasons for this disappearance were the variable potency of cannabis extracts, the erratic and unpredictable individual responses, the introduction of synthetic and more stable pharmaceutical substitutes such as aspirin, chloral hydrate and barbiturates, and the recognition of important adverse effects such as anxiety and cognitive impairment (Fankhauser M, 2002). Accordingly, cannabis preparations gradually fell out of use by the medical profession.⁴ As one prominent physician in 1938 noted (Walton RP, 1938)⁵:

The therapeutic application of Cannabis is more a matter of history than of present-day practice. Synthetic analgesics and hypnotics have almost entirely displaced these preparations from their original field of application. The newer synthetics are more effective and reliable and, in addition, have been more intensively exploited by commercial interests...The drug has certain remarkable properties and **if its chemical structure were determined and synthetic variations developed**, some of these might prove to be particularly valuable, both as therapeutic agents and as experimental tools (Walton RP, 1938).

Walton's predictions today remain both hopeful and elusive.

Because of the technological challenges involved in cannabinoid formulation and research, it was not until 1964 that the primary psychoactive ingredient in cannabis, delta-9-tetrahydrocannabinol (THC), was identified and synthesized (Mechoulam R & Gaoni Y, 1965). Coincidentally, popular interest in smoked cannabis began to increase significantly. A number of individuals reported that smoking cannabis for recreational purposes seemed to alleviate some of their medical symptoms. Interest grew in finding therapeutic uses for smoked cannabis. More advanced technology in the 1800s and early 1900s might have made a range of cannabinoid medications—similar to that of modern opiates—available, and cannabis smoking might have been relegated to the realm of non-dependent, non-

³ The AMA Committee on Legislative Activities expressed concern about the negative impact that the Act would have on the availability of cannabis preparations but acknowledged that such preparations were little used:

“Cannabis at the present time is slightly used for medicinal purposes, but it would seem worthwhile to maintain its status as a medicinal agent for such purposes as it now has. **There is a possibility that a re-study of the drug by modern means may show other advantages to be derived from its medicinal use.**”

⁴ A similar situation occurred in the treatment of cancer chemotherapy-induced nausea and vomiting. In the 1970s and 1980s, there was considerable interest in using smoked cannabis and oral THC for these conditions, since existing treatments were inadequate for control of emesis. A number of state departments of health conducted open label studies comparing smoked marijuana, oral THC, and existing antiemetics. Following the development of more effective antiemetic agents such as the 5-HT₃ receptor antagonists interest in using oral THC and smoked cannabis to prevent acute vomiting waned. (Council on Scientific Affairs Report 6, 2001).

⁵ At about that time, Dr. Walton was Professor and Head of the Department of Pharmacology and Therapeutics, Medical College of South Carolina, Charleston, S.C., and wrote and published on cannabis in 1938.

medical use for pleasure (McCarberg WH & Barkin RL, 2007).⁶ Thus, the “lag” in the technological capabilities of modern science probably contributed to the controversy of “medical marijuana.” That technology has now arrived, and the era of modern cannabinoid medication development is well on its way.

The Basis for Cannabinoid Therapeutics

Momentum for developing cannabinoid medications gained force only after the discovery of endocannabinoid receptors (Munro S, Thomas KL, & Abu-Shaar M, 1993; Howlett AC, 1995) and the brain’s endogenous cannabinoid ligands in the late 1980s and early 1990s (Devane WA, Hanus L, Breuer A et al, 1992). These monumental discoveries, parallel in their basic framework to the discovery of the brain’s endogenous morphine-like neural system (the endorphins), transformed the focus of research from marijuana to the brain itself. These discoveries marked the dawn of cannabinoid neuroscience.

We now understand that an extensive system of nerves within the brain communicate with each other using the same basic chemistry found in marijuana. While we are only beginning to unravel the role the endocannabinoid system plays in overall brain function, Raphael Mechoulam has declared that “The cannabinoid receptors are found in higher concentrations than any other receptor in the brain... and the endocannabinoid system acts essentially in just about every physiological system that people have looked into, so it appears to be a very central system” (Brown D, 2005-2006).

Cannabinoid type 1 (CB1) receptors are distributed throughout the brain, where they are concentrated in the hippocampus, amygdala, basal ganglia, cerebellum, nucleus accumbens and cortex (anterior > posterior). Cannabinoid type 2 (CB2) receptors are generally located peripherally (Herkenham M, Lynn AB, Little MD, et al, 1990). Tonic activity within the endocannabinoid system is continuously modulating a huge variety of physiological and brain functions, including short-term memory, learning, appetite, anxiety/fear, pain, and spontaneous motor activity.

Two aspects of the endocannabinoid system are important from the addiction medicine perspective. First, CB1 receptors and endocannabinoid ligands are heavily concentrated in the nucleus accumbens – the final common pathway activated by drugs of addiction in the Reward Center. Frequent flooding of these receptors by the ingestion of exogenous cannabinoids is in part responsible for the development of dependence (Budney A, Hughes JR, Moore BA, et al, 2004). Also contributing to withdrawal symptoms is the downregulation of cannabinoid receptors by up to 60% in response to exogenous cannabinoids (Romera J, 1997).

CB1 knockout mice, which have virtually no cannabinoid activity in the central nervous system (CNS), have been used to assess the overall role of our endocannabinoid

⁶ “Unlike cannabis, the medicinal and recreational forms of opium were clearly distinct. Had medical technology been advanced enough at that time to allow cannabinoids to be identified, formulated, and delivered, *the “medical marijuana” movement would probably not have occurred.* As with the opium poppy, prescription cannabinoid medications and crude herbal cannabis would have been used in very different venues.”

system. Without a functioning cannabinoid system due to a genetically induced lack of CB1 receptors, knockout mice demonstrate increased memories (Marsicano G, Wotjak CT, Azad SC, et al, 2002), decreased extinction of aversive memories, failure to self-administer morphine and a significantly increased mortality from a wide variety of causes (Chhatwal JP, Davis M, et al, 2005).

THC and similar molecules in marijuana are able to affect the brain only because they mimic our natural neurotransmitters, flooding receptor sites with stimulation. All the cannabinoid-based areas of the brain are subsequently activated beyond normal physiological levels. This is generally enjoyable for most people, but not without consequences for many. Smoking marijuana essentially reaches into the brain and increases the activity of one specific subset of neuronal activity – like turning up a rheostat that controls the brain’s endocannabinoid activity.

The question of whether there is medicinal value in stimulating, or reducing, activity in cannabinoid-based portions of the brain depends on three things:

1. Specific areas of the brain where cannabinoid chemistry is concentrated and the functions served by these areas;
2. The specific disease and symptoms being treated; and
3. Side effects produced by the treatment - essentially a “medical cost/benefit analysis”.

In addition there are also cannabinoid receptors (CB2) found throughout the body, on nerves, blood cells, on organs, and throughout all stages of embryonic development. The potential for cannabinoid therapeutics must also look at the direct impact of stimulating or antagonizing these receptors as well.

The potential value of any cannabinoid medication depends on modifying physiologic functions that are naturally controlled by our body’s internal cannabinoid system. Given all the functions that are modulated by endocannabinoid chemistry, it is likely that either stimulating or blocking portions of this ubiquitous neuronal subsystem has the potential for relieving the suffering caused by disease. The basic neuroscience of our endocannabinoid system thus provides the American Society of Addiction Medicine’s (ASAM) perspective on the most effective framework for medicalizing cannabinoid therapeutics.

- A. ASAM recognizes that a role has been established for the body’s natural cannabinoid chemistry in regulating many facets of memory, pain, emotions, appetites, motor activity, digestion, attention, higher order executive functions, reward/addiction, the immune system, and reproductive activity.
- B. Multiple illnesses affecting these functions, such as dementia, chronic pain, anxiety, post traumatic shock disorder (PTSD), wasting syndrome, spasticity, diarrhea, irritable bowel syndrome, the nausea/vomiting of chemotherapy and applications still being explored in research labs, are likely to benefit from medications based on our body’s inherent cannabinoid chemistry.

- C. The new cannabinoid medications being developed will range from ones that directly stimulate cannabinoid receptors to ones that prolong the effect of our natural cannabinoid chemistry (similar to how most antidepressants work) to ones that block the receptors in order to reduce the activity of our cannabinoid system. Medications are also being developed that can target only portions of our cannabinoid system without affecting the whole system (for example, reducing pain in the body without affecting the brain) (Ibrahim MM, Deng H, et al, 2003; Quartilho A, Mata HP, et al, 2003).

The exciting discoveries summarized above regarding the endocannabinoid system have stimulated preclinical research:

“This evolution has followed the same principles as the evolution of drug therapy in general. The direction has been away from crude substances of variable composition, stability, and potency, toward the development of progressively more selectively active pure compounds that permit dosage that is more precise and reduced risk of unwanted side effects. (Varvel SA, Wise LE, et al, 2007) ²⁵”

After a delay of over a century, we are now on the cusp of a new era in which many cannabinoid products could become part of the physician’s armamentarium. A number of cannabinoid products are already in development. Several are plant-derived (Sativex®, Cannador®); others are synthetic analogues (Chatwal JP, 2005) or ligands at the CB2 rather than the CB1 receptor (Marsicano G, Wotjak, et al, 2002; Chhatwal JP, David M, Maguschak KA, et al, 2005; Varvel SA, Wise LE, et al, 2007); still others involve new delivery systems for THC. It will take time for this research to evolve into a range of prescription medications. The duration and complexity of this development process is, however, necessary to ensure that a product’s pharmacology and risk/benefit profile are adequately understood and such preparations can meet FDA standards of consistency, safety and efficacy before the product is distributed to patients.

“Medical Marijuana” in the United States

Fifteen states and the District of Columbia have currently enacted laws that permit the use of cannabis for medical use. Some of the laws have been passed by popular vote through the initiative process; state legislative bodies have promulgated a few. The first of these laws passed in 1996. After having failed for several years to obtain a legislative enactment, cannabis advocates took the issue to the people of California through the initiative process.⁷ In most of these states, individual patients and/or their designated

⁷ There were several “medical marijuana” bills introduced into the California legislature, beginning in 1994, e.g., SB 1364, AB 2933, AB 1529, AB 2120, but they either did not pass or were vetoed by the Governor. Coincidentally, these bills followed immediately on the heels of the final disposition of a petition filed by the National Organization for the Reform of Marijuana Laws (NORML), which was filed in 1972 shortly after

caregivers may cultivate cannabis for medical purposes. Some states place limits on the medical conditions that can qualify for legal protection, (e.g., Washington, New Jersey, New Mexico). A few permit the distribution of cannabis by certain types of dispensaries, (e.g., Rhode Island, New Jersey, and New Mexico). Without exception, all of the state laws make physicians the “gatekeepers,” that is, a patient cannot qualify to use cannabis for medical purposes unless a physician has “recommended” the use of cannabis for that person.⁸

As a general rule, these laws do not create new “rights” under state law; rather, they allow a patient (and designated caregivers) to raise his/her personal medical use/cultivation as an affirmative defense if the individual is arrested and charged with violation of certain state criminal laws pertaining to cannabis.⁹

In the first few years following the enactment of the first “medical marijuana” laws, individual patients and their designated caregivers primarily conducted cultivation. Accordingly, the laws had limited application, and research might have been able to provide important data before widespread use occurred. Now, however, the situation has changed dramatically and dispensaries have proliferated at a rapid rate. Many physicians have opened practices based exclusively on issuing cannabis recommendations (see further discussion below). As a result, thousands of persons, with diverse medical conditions (and/or non-medical reasons), are using cannabis, despite the fact that research has not kept (and cannot keep) pace with such rapidly expanding use for the myriad of conditions that cannabis is reported to treat.

Reports from Expert Bodies

The early “medical marijuana” initiatives garnered widespread media coverage, public interest, and controversy. As a result, a number of expert bodies examined the data relating to the therapeutic potential of cannabis and cannabinoids.

National Institutes of Health

In 1997, the National Institutes of Health (NIH) hosted a workshop at which medical experts discussed the potential medical uses of smoked cannabis. This group reviewed the

Congress placed marijuana in Schedule I of the Controlled Substances Act in 1970. NORML initially sought to remove marijuana entirely from the CSA or, alternatively, place marijuana in Schedule V, *NORML v. Ingersoll*, 497 F.2d 654 (D.C. Cir. 1974), but agreed that US treaty obligations did not permit that course of action for cannabis and cannabis resin. *NORML v. DEA*, 559 F.2d 735 (D.C. Cir. 1977) fn. 43. Subsequently, NORML sought to move marijuana to Schedule II. That petition was denied by DEA and, after 22 years of litigation, the DEA denial was upheld by the federal courts. *ACT v. DEA*, 15 F.3d 1131 (D.C. Cir. 1994).

⁸ Since 1) no marijuana-based product has been approved by the FDA, and 2) marijuana is a Schedule I substance under federal law, a physician cannot prescribe, nor can a pharmacist dispense, such a product. Instead, physicians may “recommend” the medical use of cannabis to a specific patient. In Michigan, for example, a physician must certify that the patient is likely to receive medical benefit from the use of cannabis.

⁹ For example, the California Supreme Court has ruled that California’s laws confer only a limited immunity which “operates by decriminalizing conduct that otherwise would be criminal.” *People v. Mower* 28 Cal.4th 457, 472; 122 Cal.Rptr.2d 326 (2002).

literature and conducted hearings relating to the therapeutic uses of cannabis to treat conditions including: analgesia, neurological and movement disorders, nausea and vomiting associated with cancer chemotherapy, glaucoma, and appetite stimulation/cachexia (National Institutes of Health, 1997). For a number of these conditions, the group concluded that there would only be limited value in pursuing further research into smoked cannabis, because effective treatments were already available. However, they did recommend new controlled studies on smoked cannabis since current research did not provide definitive answers on its risk/benefit profile. The consensus was that in these research studies, smoked cannabis must meet the same standards as other medications in terms of effectiveness and safety.

Given that delta-9-tetrahydrocannabinol (dronabinol, the generic and Marinol®) is marketed to treat nausea and vomiting associated with chemotherapy and appetite stimulation in AIDS patients, the expert group suggested that the effects of smoked cannabis on these conditions be evaluated and studied to draw comparisons between smoked cannabis and synthetic THC.

Experts also specifically suggested that NIH use its resources to develop a smoke-free inhaled delivery system for cannabis or THC to eliminate the negative health effects of smoking in research trials.

Institute of Medicine Report

In 1997, the White House Office of National Drug Control Policy (ONDCP) requested that the Institute of Medicine (IOM) conduct a review of the scientific evidence regarding the potential health benefits and risks of cannabis and its component cannabinoids. In 1999, the IOM issued the report *Cannabis and Medicine: Assessing the Science Base* that became the foundation of study into “medical marijuana” (Joy JE, Watson, Jr. SJ & Benson JA, 1999). IOM made a series of recommendations pertaining to the use of cannabis in medical treatment that revolve around the need for more research and evaluation.

In its report, IOM made the following recommendations (Joy JE, Watson, Jr. SJ & Benson JA, 1999):

- *Recommendation 1:* Research should continue into the physiological effects of synthetic and plant-derived cannabinoids and the natural function of cannabinoids found in the body. Because different cannabinoids appear to have different effects, cannabinoid research should include, but not be restricted to, effects attributable to THC alone.
- *Recommendation 2:* Clinical trials of cannabinoid drugs for symptom management should be conducted with the goal of developing rapid-onset, reliable, and safe delivery systems.

- *Recommendation 3:* Psychological effects of cannabinoids such as anxiety reduction and sedation, which can influence medical benefits, should be evaluated in clinical trials.
- *Recommendation 4:* Studies to define the individual health risks of smoking marijuana should be conducted, particularly among populations in which cannabis use is prevalent.
- *Recommendation 5:* Clinical trials of marijuana use for medical purposes should be conducted under the following limited circumstances: trials should involve only short-term marijuana use (less than six months), should be conducted in patients with conditions for which there is reasonable expectation of efficacy, should be approved by institutional review boards, and should collect data about efficacy.
- *Recommendation 6:* Short-term use of smoked marijuana (less than six months) for patients with debilitating symptoms (such as intractable pain or vomiting) must meet the following conditions:
 - failure of all approved medications to provide relief has been documented,
 - the symptoms can reasonably be expected to be relieved by rapid-onset cannabinoid drugs,
 - such treatment is administered under medical supervision in a manner that allows for assessment of treatment effectiveness, and
 - Involves an oversight strategy comparable to an institutional review board process that could provide guidance within 24 hours of a submission by a physician to provide marijuana to a patient for a specified use.

The IOM clearly stated that the purpose of short-term *studies* with smoked cannabis would serve, at best, as preliminary support for the development of cannabis-based or cannabinoid modern medications. “The goal of clinical trials of smoked cannabis **would not be to develop cannabis as a licensed drug, but rather to serve as a first step toward the possible development of nonsmoked rapid-onset cannabinoid delivery systems** (emphasis added)” (Joy JE, Watson, Jr. SJ, & Benson JA, 1999). Specifically, IOM stressed that there is “little future in smoked marijuana.”

The IOM acknowledged that, until a nonsmoked rapid-onset cannabinoid drug delivery system became available, there was “no clear alternative” for people suffering from chronic conditions that might be relieved by smoked cannabis. The IOM suggested that one “possible approach” would be to treat patients as *n*-of-1 clinical trials, in which “patients are fully informed of their status as experimental subjects using a harmful drug delivery system. It recommended that their condition is closely monitored and documented under medical supervision, thereby increasing the knowledge base of the risks and benefits of marijuana use under such conditions.” Under the current system of cannabis distribution by dispensaries, with limited oversight by physicians, these patient protections and data-collection functions are wholly absent.

Professional Organizations

American Medical Association

In both 1997(Council on Scientific Affairs Report 10, 1997) and 2001, the AMA issued reports on the scientific data relevant to the medical utility of cannabis (Council on Scientific Affairs Report 6, 2001). In November 2009, the AMA's Council on Science and Public Health (CSAPH) revised several of its policy statements on cannabis. The organization retained its previous recommendations for: 1) further adequate and well-controlled studies into cannabis and cannabinoids; 2) urging the NIH to facilitate grants applications for, and the conduct, of such trials; and 3) permitting free and unfettered exchange of information on treatment alternatives between physicians and patients, which should not subject either party to criminal sanctions.

In the Executive Summary, CSAPH noted that short-term clinical trials suggest that smoked cannabis has efficacy in certain medical conditions (a conclusion presumably further analyzed in the body of the report, which has not yet been published). In its Recommendation, AMA urged that cannabis's status as a schedule I drug be "reviewed." The purpose of such review would be to ascertain whether rescheduling could facilitate the conduct of clinical research and the "development of cannabinoid-based medicines and alternate delivery methods." AMA emphasized that this recommendation should **not** be viewed as an "endorsement of state-based medical cannabis programs, legalization of marijuana or that scientific evidence on the therapeutic use of cannabis meets the current standard for a prescription drug product" (Council on Science and Public Health Report 3, 2009). The report stressed "the patchwork of state-based systems that have been established for 'medical marijuana' is woefully inadequate in establishing even rudimentary safeguards that normally would be applied to the appropriate clinical use of psychoactive substances. The future of cannabinoid-based medicine lies in the rapidly evolving field of botanical drug substance¹⁰ development, as well as the design of molecules that target various aspects of the endocannabinoid system."¹¹

American College of Physicians

In 2008, the American College of Physicians' (ACP) Health and Public Policy Committee (HPPC) composed a position paper on the medical uses of cannabis that followed the lead set forth by IOM. Their positions include (American College of Physicians, 2008):

¹⁰ For the meaning of "botanical drug substance," see discussion of the FDA Botanical Guidance, below.

¹¹ At its 2010 Interim Meeting, the AMA House of Delegates voted to amend current policy by urging the creation of a "special" schedule for cannabis (rather than moving cannabis to Schedule II), for the purpose of facilitating clinical research. <http://www.ama-assn.org/assets/meeting/2010i/i-10-annotated-k.pdf>.

- *Position 1:* ACP supports programs and funding for rigorous scientific evaluation of the potential therapeutic benefits of medical marijuana and the publication of such findings.
 - Position 1a: ACP supports increased research for conditions where the efficacy of marijuana has been established to determine optimal dosage and route of delivery.
 - Position 1b: Medical marijuana research should not only focus on determining drug efficacy and safety but also on determining efficacy in comparison with other available treatments.
- *Position 2:* ACP encourages the use of nonsmoked forms of THC that have proven therapeutic value.
- *Position 3:* ACP supports the current process for obtaining federal research-grade cannabis.
- *Position 4 (as amended):*¹² ACP urges an evidence-based review of marijuana's status as a Schedule I controlled substance to determine whether it should be reclassified to a different schedule. This review should consider the scientific findings regarding marijuana's safety and efficacy in some clinical conditions as well as evidence on the health risks associated with marijuana consumption, particularly in its smoked form.
- *Position 5:* ACP strongly supports exemption from federal criminal prosecution; civil liability; or professional sanctioning, such as loss of licensure or credentialing, for physicians who prescribe or dispense medical marijuana in accordance with state law. Similarly, ACP strongly urges protection from criminal or civil penalties for patients who use medical marijuana as permitted under state laws.

In an addendum to the position paper, ACP addressed concerns raised that it was promoting smoked marijuana as medicine. In this response, ACP states that it “has not advocated for the long-term use of smoked marijuana; rather, the paper explicitly discusses the harm associated with chronic use of smoked marijuana and stresses the need for development of nonsmoked forms of cannabinoid delivery systems strictly for therapeutic purposes supported by the evidence” (American College of Physicians, 2008). ACP also stressed that it “shares the concerns expressed by some about state ballot initiatives or legislation that can undermine the federal regulatory structure for assessing the safety and efficacy of new drugs before such drugs can be approved for therapeutic use.”

American Nurses Association

In December 2008, the American Nurses Association (ANA) published the following statement on marijuana:

¹² ACP's original recommendation seemed to suggest that it was calling for the reclassification of cannabis into a “more appropriate” schedule. After receiving extensive commentary on this point, ACP clarified its position to state that the evidence merits a review of cannabis's Schedule I classification, but any change to that classification should occur only if the review established that the evidence was sufficient to justify the change.

The American Nurses Association supports (American Nurses Association, 2008):

- The education of registered nurses and other healthcare practitioners regarding appropriate evidence-based therapeutic use of marijuana including those non-smoked forms of delta-9-tetrahydrocannabinol (THC) that have proven to be therapeutically efficacious.
- Protection from criminal or civil penalties for patients using medical marijuana as permitted under state laws.
- Exemption from criminal prosecution; civil liability; or professional sanctioning, such as loss of licensure or credentialing, for healthcare practitioners who prescribe, dispense or administer medical marijuana in accordance with state law.
- Reclassification of marijuana's status from a Schedule I controlled substance into a less restrictive category.
- Confirmation of the therapeutic efficacy of medical marijuana.

The Federal Position

The Controlled Substances Act (CSA)

All controlled substances are assigned to one of five schedules under the Controlled Substances Act (CSA), depending on their medical usefulness and their potential for abuse.¹³ Cannabis/marijuana, ibogaine, mescaline, and peyote are botanical hallucinogens listed in Schedule I. Schedule I substances are those said to have:

- A high potential for abuse;
- No currently accepted medical use in treatment in the US¹⁴; and

¹³ The following factors, often referred to as the "eight factor analysis," determine the schedule to which a substance is assigned:

1. Its actual or relative potential for abuse
2. Scientific evidence of its pharmacological effects
3. The state of current scientific knowledge regarding the drug
4. Its history and current pattern of abuse
5. The scope, duration, and significance of abuse
6. What, if any, risk there is to public health
7. Its psychic or physiological dependence liability
8. Whether the substance is an immediate precursor of a substance already under control

21 U.S.C. sec. 811.

¹⁴ In a proceeding which seeks to move a drug from Schedule I to Schedule II, the DEA will examine the following factors in determining whether the drug has a "currently accepted medical use":

1. The drug's chemistry must be known and reproducible;
2. There must be adequate safety studies;
3. There must be adequate and well-controlled studies proving efficacy;
4. The drug must be accepted by qualified experts; and
5. The scientific evidence must be widely available.

See *Alliance for Cannabis Therapeutics v. DEA*, 15 F.3d 1131 (D.C.Cir. 1994). ¹⁴ See 57 F.R. 10499,10506. According to the DEA, a failure to meet any of the factors precludes a drug from having a currently accepted medical use. 57 Fed.Reg. at 10507. Only a product going through the FDA process could meet all these criteria.

- A lack of accepted safety for use under medical supervision (21 USC sec. 812(c) (Schedule I (c))).

Substances in Schedule II have:

- A high potential for abuse;
- A currently accepted use in treatment in the US or a currently accepted medical use with severe restrictions; and
- Abuse of the substance may lead to severe psychological or physiological dependence (21 USC sec. 812(c) (Schedule II (a))).¹⁵

Opium, poppy straw, concentrate of poppy straw, and coca leaves are botanical materials listed in Schedule II. At the time the CSA was enacted in 1970, modern prescription medications derived from these botanical starting materials had already been approved for marketing by the FDA.

Substances in Schedule I may only be used in research studies by investigators who 1) have protocols that have been approved by the FDA and 2) have received research registrations from the Drug Enforcement Administration (DEA). Therefore, all possession, cultivation, distribution, etc., of cannabis, even if permitted under various state “medical marijuana” laws, continues to be illegal under federal law. A physician, however, has a First Amendment right under the federal Constitution to provide a patient with *bona fide* medical advice, which may include recommending the use of cannabis for medical purposes, so long as the physician does nothing affirmatively to aid or abet a patient in obtaining cannabis (*Conant v. Walters*, 2002).¹⁶

Federal Departments and Agencies

On a number of occasions since 1996, the Drug Enforcement Administration has closed cannabis dispensaries (*US v. Oakland Cannabis Buyers Cooperative*, 2001) In October 2009, the federal Department of Justice (DOJ) issued guidelines to prosecutors (U.S. Department of Justice, 2009) that, despite the publicity these guidelines received suggesting that the Obama administration was permissive towards “medical marijuana,” are actually quite narrow. At the outset, the provisions stress that marijuana is a “dangerous drug.” They confirm the (already-existing) policy that federal prosecution priorities should be focused on significant¹⁷ traffickers, not small-scale individual users. Hence, U.S. attorneys are advised not to prosecute **patients** “with cancer or other serious illnesses” who are using cannabis as part of a “recommended treatment regimen consistent

¹⁵ 21 USC sec. 812(c) (Schedule II (a)). Substances in Schedules III-V have decreasing levels of abuse potential and are subject to lesser degrees of control.

¹⁶ For a more detailed description of this issue, see California Medical Association, CMA ON CALL, document #1315, The Compassionate Use Act of 1996: The Medical Marijuana Initiative (Jan. 2010) http://www.cmanet.org/bookstore/freeoncall2.cfm/CMAOnCall1315.pdf?call_number=1315&CFID=745764&CFTOKEN=27566287 (accessed Feb. 18, 2010).

¹⁷ Note: this term is broader than “major.”

with state law” or **caregivers** in “clear and unambiguous” compliance with state law who provide cannabis to such patients (California Attorney General, 2008). “Commercial enterprises,” however, and those entities whose “nonprofit” medical marijuana distribution activities are merely a pretext for for-profit endeavors, **are** subject to prosecution.¹⁸

Subsequent to the issuance of these DOJ guidelines, the DEA issued a statement:

These guidelines do not legalize marijuana. It is not the practice or policy of DEA to target individuals with serious medical conditions who comply with state laws authorizing the use of marijuana for medical purposes. Consistent with the DOJ guidelines, we will continue to identify and investigate any criminal organization or individual who unlawfully grows, markets, or distributes marijuana or other dangerous drugs (Drug Enforcement Administration, 2009).

Similarly, the Director of ONDCP stressed:

The Department of Justice's guidelines strike a balance between efficient use of limited law enforcement resources, and a tough stance against those whose violations of state law jeopardize public health and safety...Enforcing the law against those who unlawfully market and sell marijuana for profit will continue to be an enforcement priority for the U.S. government (Office of National Drug Control Policy, 2009).

The Department of Transportation (DOT) also emphasized that the guidelines would not impact the DOT's drug testing program: “The Department of Transportation's Drug and Alcohol Testing Regulation – 49 CFR Part 40, at 40.151(e) – does not authorize ‘medical marijuana’ under a state law to be a valid medical explanation for a transportation employee's positive drug test result” (DOT, Medical Marijuana Guidelines, 2009)

In light of these statements, the current position of the federal government is uncertain. Nevertheless, largely because of exaggerated media reports, the Obama administration is viewed as lenient toward “medical marijuana.” This has been followed by proliferation of dispensaries which results in virtually unrestricted distribution of cannabis.

Modern Medications and the FDA Approval Process

In earlier days in Western medicine, herbs and other botanical products were common treatment options and remain so in many developing countries. By the end of the 20th century, however, these crude botanical mixtures and preparations had been replaced

¹⁸ The guidelines also allow prosecution of those distribution activities that **may be consistent** with state law (in case a state decides to pass very liberal legislation), if necessary to “serve important federal interests.”

by “modern” medications which were characterized by standardized, purified products whose active ingredients (AIs) were often of synthetic origin.

| Folk Remedies | Modern Medicines |
|--|--|
| Use plant products whose composition is uncertain and unregulated. | Use highly purified or defined medications, often comprising synthetic chemicals. |
| Treat poorly defined illnesses or symptom with unknown basis (e.g. cough from TB, influenza, or etc.). | Treat specific illnesses. |
| Are based on little understanding of the pathophysiology of the disorders being treated. | Elucidate the nature of the illnesses. |
| Are based on little understanding of the role of “medicine” in the therapy. | Use medicines that have a recognized effect on pathological processes; often understand the mechanism of action. |
| Are used in inconsistent and hard-to-quantify amounts. | Are administered in controlled doses; delivery system provides predictable dose over defined period of time. |

Even those medications that once originated in botanical material, e.g., digitalis, were ultimately comprised of synthetic AIs. Dosage forms and delivery systems were carefully tested to deliver a discrete, reproducible dose. The ever-increasing sophistication and rigor of the FDA approval process contributed to this trend.

That approval process has been developed over the past century to protect patient safety and welfare. It promotes the quality, safety, and efficacy of medications, and is supported by all major medical/health care organizations. Extensive preclinical and clinical testing -- the results of which are published in peer-reviewed journals -- provides a robust body of risk-benefit and pharmacological data, on which physicians depend in order to make informed prescribing decisions. The registration and inspection procedures ensure that the manufacturing process is conducted in accordance with validated quality control tools and measures. Manufacturers’ promotional activities are limited to those claims supported by the medication’s label. Medications are prescribed and dispensed under the close supervision of licensed health care providers, primarily physicians and pharmacists.

In addition, the FDA has recently indicated that medications, both with and without abuse potential, must develop special plans to identify, evaluate, and mitigate the medication’s risks (Department of Health and Human Services, Food and Drug Administration, 2010). Such plans must include, where relevant, the risks of abuse and diversion (Department of Health and Human Services, Food and Drug Administration, 2009).

By contrast, herbal products and other dietary supplements are subject to a far lesser degree of supervision. Composition and quality are uncertain; clinical data on safety and efficacy are limited; and physicians generally do not feel qualified to opine about specific products' risks and benefits for particular medical conditions (Dietary Supplement Health and Education Act of 1994). Various scholars have suggested that the FDA should more stringently regulate many dietary supplements (Cohen PJ, 2005). Generally, dietary supplements are ingested orally and lack abuse potential.¹⁹

Despite the reduced level of regulatory scrutiny and quality assurance, public interest in botanically derived treatments continues to rise. Acknowledging such interest, and the fact that technology has improved significantly in recent decades, the FDA issued a 2004 guidance document that sets forth the principles to which pharmaceutical manufacturers must adhere when developing prescription medications derived from complex botanical material (Food and Drug Administration, 2004). The Guidance permits some leniency in the biochemical characterization of a prospective botanical agent during the early stages of research; however, at the point of advanced clinical research (Phase III), or New Drug Application (NDA), a medication must meet all standards for a new chemical entity (NCE).

The document identifies three stages of development for a botanically derived medication: 1) Botanical Raw Material (BRM), 2) Botanical Drug Substance (BDS) and 3) Botanical Drug Product (BDP). **BRM** is the fresh or processed (e.g., cleaned, frozen, dried, or sliced) part of a single species of plant or a fresh or processed alga or macroscopic fungus. **BDS** is prepared from botanical raw materials by one or more of the following processes: pulverization, decoction, expression, aqueous extraction, ethanolic extraction, or other similar process. It may be available in a variety of physical forms, such as powder, paste, concentrated liquid, juice, gum, syrup, or oil. **BDP** is a botanical product that is intended for use as a drug, i.e., a finished drug product that is prepared from a botanical drug substance. Botanical drug products are available in a variety of dosage forms, such as solutions (e.g., teas), powders, tablets, capsules, elixirs, and topicals.

In 2006, the FDA rejected the contention that smoked herbal cannabis "is a safe and effective medication." FDA stated that:

A past evaluation by several Department of Health and Human Services (DHHS) agencies, including the Food and Drug Administration (FDA), Substance Abuse and Mental Health Services Administration (SAMHSA) and National Institute for Drug Abuse (NIDA), concluded that no sound scientific studies supported medical use of marijuana for treatment in the United States, and no animal or human data supported the safety or efficacy of marijuana for general medical use.... If a drug product is to be marketed, disciplined, systematic, scientifically conducted trials are the best means to

¹⁹ On December 30, 2003, the FDA announced its intention to ban the marketing of ephedra (FDA, 2004).

obtain data to ensure that drug is safe and effective when used as indicated. Efforts that seek to bypass the FDA drug approval process would not serve the interests of public health because they might expose patients to unsafe and ineffective drug products. FDA has not approved smoked marijuana for any condition or disease indication (Food and Drug Administration, 2006).

This statement does not imply that FDA will reject all cannabis-based medications. Indeed, one cannabis-derived medication, Sativex®, is entering into Phase III trials in accordance with the Guidance (GW Pharmaceuticals, 2006).

“Medical Marijuana” and the Modern Medication Model

The status of “medical marijuana” contrasts sharply with the critically important aspects of the modern medication model. First, crude herbal cannabis is not a homogeneous material; the term “medical marijuana” therefore does not refer to a single, consistent substance or entity. The composition of herbal material, including its THC content, varies widely depending on the strain, cultivation, storage, and harvesting practices, etc. The opium poppy can similarly vary in composition. Opium can be rich in morphine, thebaine, or oripavine (Drug Enforcement Administration, 2008). The methods of herbal cannabis administration—smoked/vaporized, baked goods, teas, infused honeys, elixirs, candies, etc.—also do not ensure that a patient receives an identifiable, standardized, and hence reproducible, dose. Patients therefore cannot be certain that they will experience the same degree of benefit or extent of side effects from time to time. Patients, particularly those unfamiliar with cannabis, may be unwittingly dosed excessively, and incur frightening or severely unpleasant effects. For example, in a media report, one patient with advanced cancer ingested 1/8 teaspoon of cannabis-infused honey that she had purchased at a dispensary. “After a few hours, she was hallucinating, too dizzy and confused to dress herself for a doctor's appointment. Then came vomiting far worse than her stomach upset before she took the drug” (Mathews AW, 2010).

Second, quality control mechanisms are generally absent. As a result, cannabis products may be contaminated with microbes.²⁰ Certain pathogens, such as aflatoxins, are not destroyed by heat (as in smoking or vaporizing) and are increasingly being recognized as an “underestimated source of neurological toxicity or infections such as aspergillosis.” Individuals who are using anti-inflammatory steroids or have compromised immune systems are especially vulnerable to such infections (Hazekamp A, 2006). Heavy metals and pesticides may also be present. Cannabis samples recently tested from dispensaries in

²⁰ A number of bacteria that are pathogenic to humans have been found on cannabis, including: *Salmonella muenchen*, *Klebsiella pneumoniae*, *Eutero bacter cloacae*, *E. agglomerans*, *Streptococcus* (Group D), *Thermoactinomyces candidus*, *T. vulgaris*, *Micropolyspora faeni*, *Aspergillus fumigatus*, *A. niger*, *A. flavus*, *A. tamarri*, *A. sulphureus*, *A. repens*, *Penicillium chrysogenum*, *P. italicum*, *Rhizopus stolonifer*, *Alternaria alternata*, *Curvularia lunata*, and *Histoplasma capsulatum*. See generally, McPartland JM. “Contaminants and adulterants in herbal Cannabis,” in *Cannabis and Cannabinoids—Pharmacology, Toxicology and Therapeutic Potential* (Grotenhermen F & Russo E eds.) (Haworth Press New York) 2002.

Los Angeles contained pesticide levels 170 times greater than that permitted for herbal products (*People v. Hemp Factory V*, 2009).²¹ The manufacturers of these products have essentially no accountability, and the FDA does not inspect their manufacturing facilities. Patients injured by harmful products have no legal recourse.

Third, distribution of cannabis products does not take place within the monitored and regulated channels of supply for pharmaceuticals, but rather through dispensaries. These products are not labeled with content information, or with warnings and instructions for proper use, despite the fact that this is a requirement for all medical products under both state and federal law (California Sherman Food, Drug, and Cosmetic Act). Dispensary personnel who are not licensed medical practitioners offer medical advice concerning the efficacy or appropriateness of various products.

Finally, appropriate physician supervision is virtually unavailable. As indicated above, all state “medical marijuana” laws place physicians in an untenable position—on the one hand, being appointed the gatekeepers of a patient’s access to cannabis; on the other, having no access to the information necessary to provide meaningful advice and supervision. Reliable data—essential to a physician’s ability to assess a treatment option--are not being generated by the existing system of distribution and use. There is no mechanism for collecting data reflecting efficacy or adverse events; therefore, the medical community is precluded from knowing whether specific medical conditions are being improved, to what extent, and in which percentage or subgroup of patients, nor whether there are contraindications, drug-drug interactions, etc.

It is not surprising that in sessions at national medical conferences describing “New Therapeutic Developments,” herbal cannabis is almost never mentioned, despite its prominence in the media. Without a foundation of rigorous data, developed in clinical trials of proper length and design, and published in peer-reviewed journals, no cannabis product can ever gain entrance into the physician’s armamentarium and thereby become available to patients as a legitimate option among various treatment choices. Therefore, if it continues in its present form, the current cannabis distribution system has the unfortunate--even ironic--effect of **preventing** the vast majority of patients, who wish to be able to obtain meaningful guidance, advice, and supervision from their treating physicians, from obtaining access to cannabis-based medications.

Physicians should carefully consider their ethical and professional responsibilities before issuing a cannabis recommendation to a patient. A physician should not advise a patient to seek a treatment option about which the physician has inadequate information regarding composition, dose, side effects, or appropriate therapeutic targets and patient populations. State medical boards have indicated that physicians who discuss cannabis with a patient must adhere to the relevant standard of care and follow the basic

²¹ In 2005, a cannabis advocate died from a neurological condition believed to have resulted from handling cannabis contaminated by pesticides, which was being distributed through cannabis dispensaries. (Gardner F, 2005.)

professional tenets of good patient care: a physical examination, medical history, review of past medical treatments, development of a treatment plan, follow up and continuing oversight (Medical Board of California, 2004). Failure to do so may result in a finding of unprofessional conduct and significant sanctions, including license suspension or revocation (Medical Board of California, 2009). A physician's professional liability coverage may also not extend to harm resulting from a patient's use of cannabis upon the physicians' recommendation (Educating Voices, 2003).

This lack of effective physician oversight poses one of the greatest dangers to patients in the "system" by which cannabis is made available for ostensible medical use. The impact of this absence of professional monitoring is exacerbated by the fact that the potency of cannabis herbal material and cannabis products has risen significantly over the last few decades.²² Such increased potency may heighten the risk of addiction (National Center on Addiction and Substance Abuse, 2008). This is particularly problematic in light of the fact that, increasingly, adolescents are obtaining "cards" which enable them to purchase and use cannabis with legal impunity. A number of adolescent psychiatrists have expressed concern at the rapidly increasing number of young patients who enter treatment for cannabis dependence but who have "cards" facilitating their continued use (Thurstone C, 2010). Furthermore, several studies have revealed that a very large percentage of individuals have sought cannabis cards in order to treat anxiety or depression, rather than nausea/vomiting from cancer chemotherapy, HIV, or pain and that almost all of those applicants initiated cannabis or other substance use during adolescence (Gardner F, 2006; O'Connell TJ & Bou-Matar CB, 2007). Such individuals require close physicians supervision to ensure that they are not developing or maintaining cannabis dependence, rather than attempting to alleviate a medical condition. Finally, individuals who smoke or vaporize high-potency cannabis are likely to experience intoxication, since inhalation rapidly raises plasma and brain levels of THC (Huestis MA, Henningfield JE, Cone EJ, 1002; Huestis MA, 2007). This may prevent both physicians and patients from identifying disease progression and hinder patients from obtaining appropriate treatment (Medical Board of California, 2004)²³.

What Has Been Tried in Other Countries?

Both Canada and the Netherlands have government-supervised programs for distributing cannabis for medical use. In Canada, court rulings mandated that the government establish a procedure through which patients could qualify to cultivate and possess cannabis for medical purposes. Subsequently, the government was required itself

²² The University of Mississippi has been analyzing the THC levels of seized cannabis for over 30 years. In that period, those levels (for domestic cannabis seizures) have increased from an average of 1.7% to 13%. See University of Mississippi Marijuana Potency Monitoring Project, www.whitehousedrugpolicy.gov/publications/pdf/mpmp_report_104.pdf.

²³ "The physician should determine that medical marijuana use is not masking an acute or treatable progressive condition, or that such use will lead to a worsening of the patient's condition."

to establish a regulated source of supply (Health Canada, Marijuana Medical Access Regulations, 2001).

Physicians have voiced serious concerns about this system. The Canadian Medical Association (CMA) stated:

Physicians are not in a position to counsel patients regarding the use of marijuana. Specifically, they are unable to provide thorough and necessary information regarding such issues as proper dosage, marijuana's interaction with other drugs or its impact on other pre-existing medical conditions... Lack of information on the indications, risks and benefits of medicinal marijuana hinders [a physician's] ability to inform properly patients and has the potential to threaten the patient-physician relationship. **CMA does not support physicians controlling access to substances for which routine pre-market regulatory review of safety, purity and efficacy, as required for current prescription drugs, has not occurred. (Canadian Medical Association, 2001)**

Physicians for a Smoke-Free Canada concurred:

First, since marijuana has not been thoroughly tested as a medicine, most physicians are familiar neither with its potential benefits (if any), nor with the dosage required to achieve those benefits. Second, when a patient is requesting smoked marijuana, the risks associated with smoking, coupled with the lack of clinical knowledge about specific benefits, make any accurate approximation of the risk to benefit ratio of treatment impossible (Physicians for a Smoke-Free Canada, 2002).

The Canadian Medical Protective Association voiced the same objections:

Given the fact that many physicians would not have the necessary knowledge about the effectiveness, risks or benefits of marijuana, we believe it is unreasonable to make physicians [the] gatekeepers in this process (Wharry S, 2002; Canadian Medical Protective Association, 2008).

In 2005, the Marijuana Medical Access Regulations (MMAR) regulations were revised to remove the requirement that physicians recommend a specific daily dose, form and route of administration. However, physicians are still required to indicate, in their medical declaration, the daily amount, form, and route of administration that the applicant intends to use. Although physicians no longer must state that the benefits of cannabis outweigh the risks, applicants must still declare that they have discussed the risks with the physician who signs the medical declaration. CMPA notes that the amended Regulations "represent an improvement," but "do not address all the CMA's and CMPA's previously expressed concerns."²⁴

²⁴ CMPA advises their members to obtain a release from liability from a patient for whom the physician has approved the use of cannabis.

Under the Health Canada program, cultivation is required to be conducted under Good Manufacturing Practices. Furthermore, in order to ensure that the microbial content remains at acceptable levels, the cannabis is irradiated before it is provided to patients (Health Canada, Product Information Sheet, 2008; Hazekamp A, 2006).²⁵ The dried cannabis has a THC level of $12.5 \pm 2\%$. Health Canada provides information to both physicians and to patients concerning the use of cannabis, including potential side effects (Health Canada, Product Information Sheet, 2008). Nevertheless, the system is foundering. An estimated 400,000-1,000,000 Canadians use cannabis for “self-identified” medical purposes, but approximately 4,029 persons have government authorizations to possess cannabis. Fewer than 20% of those access cannabis from Health Canada.²⁶ Detractors of the program claim, among other things, that the government authorization process is too lengthy and cumbersome; relatively few physicians will sign the necessary form; and the quality of the cannabis is not satisfactory (although it is on average 12% THC). They further claim that patients wish to select different strains for various medical conditions; and dosing limits confine patients to 5 grams a day, unless a physician is willing to explain a patient’s need for a higher daily intake (Belle-Isle L, Hathaway A, 2007; Canwest News Service, 2010). As a result, patients obtain their cannabis—and their information about the medical uses of cannabis and cannabis products-- from different “compassion clubs.”

In addition to criticisms from health care providers and patients, Canada has also incurred a reprimand from the International Narcotics Control Board (INCB), which believes that Canada is operating outside of its obligations under international treaties. In the aftermath of the INCB’s statement, governmental authorities have undertaken to review the Canadian program (Edwards S, 2010).

The situation in Canada demonstrates that even government-supervised cannabis cultivation and distribution programs are **not** sufficient to enable cannabis to become a legitimate medication that physicians are (or should be) comfortable prescribing. In order for cannabis-based medications to become broadly available to patients **through their treating physicians**, those medications must go through the conventional domestic medication approval processes.

Existing Research: What Do We Know and What Do We Still Need to Determine?

Issues for Additional Research

Considerable analytical and preclinical research and clinical investigations have been conducted with cannabinoid agonists, antagonists, and other compounds that affect

²⁵ The Netherlands has a similar program. That cannabis, too, is irradiated to reduce microbial levels.

²⁶ As of June 2009, 4029 persons were authorized to possess cannabis, and 2841 persons were authorized to cultivate cannabis for medical purposes (2360 of which hold a personal use production license; 481 hold a designated-person production license). However, only 798 are currently obtaining cannabis from Health Canada; 891 have obtained seeds for cultivation; and 188 persons have received both. <http://www.hc-sc.gc.ca/dhp-mps/marihuana/stat/2009/june-juin-eng.php>

the cannabinoid receptor system. In examining such research, it is essential to avoid drawing excessively broad conclusions about the benefits and risks of smoked cannabis in humans from the results of published studies involving other preparations and other research settings.²⁷ For example, preclinical research studying synthetic THC, *in vitro* or *in vivo*, may offer intriguing possibilities for future clinical research, but it is certainly not determinative of the benefit/adverse event profile of smoked cannabis (or THC) in humans. Evidence that THC can inhibit malignant tumor growth in rodents does not mean, or even suggest, that smoking cannabis can prevent or cure cancer (Guzman M, 2003). Such studies provide at best a foundation for pursuing small pilot studies of a cannabinoid formulation in humans (Guzman M, et al, 2006). The effects of pure oral THC may differ significantly from that of smoked cannabis, because of both the formulation and the very different mode of delivery. Even different non-smoked cannabinoid formulations may exert notably disparate effects, depending on the cannabinoid composition and the method of administration. Finally, the effects of cannabis or cannabinoids in experimental pain models may not indicate how patients with chronic pain conditions would respond: “The respective mechanisms underlying the whole variety of chronic pain syndromes may considerably differ from acute nociception” (Hazekamp A & Grotenhermen F, 2010).

Current research reports and reviews rarely acknowledge that the composition and cannabinoid profile of modern herbal cannabis may be very different from that which existed centuries or even decades ago. Although discussions of cannabis commonly begin with the claim that “cannabis has been used therapeutically for hundreds, if not thousands, of years,” these research reports or reviews fail to point out that the cannabis plant has been significantly modified over that period through breeding techniques and modern cultivation practices. The widespread use of sinsemilla (the bud of the unfertilized female plant), coupled with sophisticated indoor cultivation projects, have in many cases increased THC levels considerably above those present in cannabis even 40 years ago.

In addition, selective breeding techniques have resulted in cannabis plants almost totally devoid of cannabidiol (CBD), a non-psychoactive cannabinoid with important therapeutic potential. In the past, a harvest of wild cannabis would have often been composed of approximately half THC and half CBD (of its major cannabinoids) (Potter DJ, Clark P, Brown MB, 2008). In animal models and some human studies, CBD has been shown to have analgesic, anti-psychotic, anticonvulsant, neuroprotective properties (Mechoulam R, Maximilian P, Murillo-Rodriguez E, et al, 1974; Russo E, Guy GW, 2006; Pertwee RG, 2004). There is also evidence that CBD may mitigate some of the negative effects of THC, such as psychoactivity (Karniol IG, Carlini EA, 1973; Karniol IG, Shirakawa I, Kasinski N, et al, 1974). Numerous reports have confirmed that CBD is almost entirely absent from modern black market cannabis (Potter DJ, Clark P, Brown MB, 2008). Because of these trends, modern herbal cannabis available in dispensaries may have very different effects than those reported centuries or even decades ago. The absence of CBD, coupled with higher levels of THC, may have adverse effects on patients, particularly in chronic use

²⁷ Case studies, surveys, and non-controlled studies are beyond the scope of this report and will not be examined.

(DiForti M, et al, 2009; Sterling E, 2010). More research is needed to elucidate the effects of different cannabinoid (especially THC: CBD) ratios.

Dose-response relationships also require further research. Cannabinoids are known to exhibit biphasic effects, i.e., a lower dose may relieve a symptom but a higher dose may exacerbate it (Health Canada, Information for Health Care Professionals, 2003). A clinical study of smoked cannabis in experimental pain illustrates this well (Wallace M, et al, 2007). Furthermore, since patients vary widely in their response to cannabinoids, inadequate dosing or titration, e.g., the use of fixed doses may cause a clinical study to be negative, even if the investigative agent might otherwise have been expected to have therapeutic value (Strassser F, et al, 2006).

The method of medication delivery may also markedly affect both the extent of efficacy and range of side effects. The IOM has stated that oral dronabinol has low bioavailability and a prolonged onset of action, making it extremely difficult for patients to adjust their dose (Joy JE, Watson, Jr. SJ, & Benson JA, 1999). Psychoactivity, often in the form of dysphoria, is a problem and may prevent a patient from consuming a dose large enough to have therapeutic effect. It has been reported that some cannabis dispensaries prepare elixirs, honeys, baked goods, and candies, but there are no reliable data to indicate whether these preparations are more efficacious and/or better tolerated than oral dronabinol.

Different subgroups of patients may have different responses to cannabis and cannabinoids. Patients with debilitating and/or chronic medical conditions, elderly patients, and those who are cannabis-naïve may be more sensitive to CNS and other side effects. In addition, there is evidence of a gender difference in responsiveness to cannabinoids, particularly with regard to analgesia (Hazekamp A & Grotenhermen F, 2010).

Results of Controlled Clinical Trials

Cannabinoid research—both preclinical and clinical—has increased almost exponentially in the past 20 years. A number of thorough reviews have been published which describe these studies (Joy JE, Watson, Jr. SJ & Benson JA, 1999; Ben Amar M., 2006; Russo EB, 2008; Hazekamp A & Grotenhermen F, 2010; Health Canada, Information for Health Care Professionals, 2003). Unfortunately, most literature reviews structure their analyses by the type of disease state, rather than the specific type of cannabis or cannabinoid intervention that was used to study that disease state. For the reasons stated above, this has the result of creating confusion and uncertainty, since different cannabis- and cannabinoid-preparations (with different formulations and dosage forms) may have different effects. Therefore, the brief summary of recent studies described below will focus on the type of cannabis or cannabinoid medication. In a limited number of studies, two such medications were compared against placebo. In such cases, the studies are generally mentioned twice.

Oral Cannabinoid Preparations

Dronabinol

Dronabinol (synthetic) is the best-known oral cannabinoid preparation.²⁸ The FDA approved it in 1985 for treatment of nausea and vomiting associated with cancer chemotherapy in patients who had failed adequately to respond to existing antiemetic treatments, and in 1992 for anorexia associated with weight loss in patients with AIDS. It showed efficacy in early studies by comparison to then-available anti-emetics (Council on Scientific Affairs Report 6, 2001). It has not, however, been compared with more recent anti-emetic medications, which have much better efficacy. One study has shown efficacy in delayed chemotherapy-induced nausea and vomiting comparable to ondansetron, although the combination of dronabinol and ondansetron did not provide benefit beyond that observed with either agent alone (Meiri E, et al, 2007). It did not show efficacy in a trial comparing an oral cannabis extract (Cannador®), THC and placebo on appetite and quality of life in patients with cancer-related anorexia-cachexia syndrome and was not more efficacious than megestrol acetate (Jatoi A, et al, 2002; Strasser F, et al, 2006). For a study investigating dronabinol and smoked cannabis on viral load and food intake in HIV positive patients, see discussion below.

Studies of Marinol® as an analgesic and/or antispasmodic have been mixed. Early studies found it efficacious in reducing cancer pain at doses of 10, 15, and 20 mg. but side effects were prominent (Noyes Jr R, Brunk SF, Avery DH, Canter A, 1975). It has been found effective in central neuropathic pain in multiple sclerosis, but not in postoperative pain (Buggy DJ, Toogood L, Maric S, et al, 2003; Svendsen KB, Jensen TS, & Bach FW, 2004). The Institute of Medicine has stated that, "It is well recognized that Marinol's oral route of administration hampers its effectiveness because of slow absorption and patients' desire for more control over dosing" (Joy JE, Watson Jr. SJ, & Benson JA, 1999).

In a large trial of patients with multiple sclerosis, dronabinol²⁹ did not show objective improvement in spasticity measured on the Ashworth scale, the primary endpoint. There was objective improvement in mobility and subjective improvements in spasticity, spasm, pain and sleep quality (Zajicek J, et al, 2003). In a one-year follow up, patients showed a small objective improvement in spasticity, as well as highly significant subjective improvements in spasticity, spasm, pain, tiredness and sleep (Zajicek J, et al, 2005).

Cesamet®

Cesamet® (Nabilone) is a synthetic cannabinoid analogue that is believed to be more potent than THC. It is approved for the treatment of nausea and vomiting associated

²⁸ The branded name is Marinol®. In Schedule III of the CSA, the substance is defined as: dronabinol (synthetic) in sesame oil and encapsulated in a soft gelatin capsule in a US Food and Drug Administration approved product. 21 CFR sec. 1308.13(g)(1). Generic versions of Marinol® are now on the market.

²⁹ This study compared dronabinol, Cannador® and placebo.

with cancer chemotherapy in patients who have failed adequately to respond to available antiemetics. In one small study, it has been shown to reduce spasticity-related pain in patients with upper motor neuron syndrome (Wissel J, et al, 2006). In a controlled study of patients undergoing various surgical procedures, high dose Nabilone in the presence of morphine PCA was associated with an increase in pain scores (Beaulieu P, 2006).

Cannador®

Cannador® is an oral cannabis extract (encapsulated), with reportedly a 2:1 ratio of THC to CBD. It is under investigation in Europe by the Institute for Clinical Research. In a study comparing Cannador® with dronabinol and placebo on appetite and quality of life in patients with cancer-related anorexia-cachexia syndrome, no differences were found between Cannador®, THC or placebo (Strasser F, et al, 2006). In a large study of patients with multiple sclerosis, it did not show objective improvement in spasticity measured on the Ashworth scale, although there was subjective improvements in spasticity, spasm, pain and sleep quality (Zajicek J, et al, 2003). In a one-year follow up, patients showed a small objective improvement in spasticity, as well as highly significant subjective improvements in spasticity, spasm, pain, tiredness and sleep (Zajicek J, et al, 2005).

In analgesic studies, Cannador® has shown a modest dose-dependent decrease in rescue analgesia requirements in postoperative pain (Holdcroft A, Maze M, 2006).

Smoked/vaporized Herbal Cannabis

In 2003, a controlled residential study found that both smoked cannabis and dronabinol had beneficial effects on appetite and weight gain in HIV positive patients on stable anti-retroviral therapy. In the course of the 21-day treatment period, there was no adverse effect on viral load or the number of CD4+ and CD8+ lymphocytes, nor did the two forms of cannabinoids interfere with the protease inhibitors taken by the patients (Abrams DJ, et al, 2003). A subsequent study demonstrated that both smoked cannabis and dronabinol increased food intake in experienced cannabis smokers, although this increase paralleled increased ratings of intoxication (Hanley M, Rabkin J, Gunderson E, Foltin RW, 2005).

In 1999, the Center for Medicinal Cannabis Research (CMCR) was established pursuant to legislation commissioning the University of California to establish a research program to investigate the therapeutic potential of cannabis and cannabinoids. Over the course of the next ten years, CMCR approved and funded fifteen clinical studies, including seven controlled clinical trials, of which five have completed and two are ongoing (Center for Medical Cannabis Research, 2010). Five clinical studies have been published in peer-reviewed journals. Three of these studies involved neuropathic pain; a fourth involved experimental pain, and one involved a pilot study for a cannabis delivery device (Abrams DI, et al, 2007; Wilsey B, et al, 2008; Ellis RJ, et al, 2009).

These studies have provided preliminary evidence of analgesic efficacy which suggest that further trials of cannabis-derived and cannabinoid medications in neuropathic

pain of various origins should be pursued to identify desirable cannabis-based or cannabinoid formulations and modes of delivery. The results of these studies cannot, however, be said to “prove” that smoked cannabis should be made available to patients with chronic pain conditions. Each study was conducted in a small number of patients and was of very short duration. In almost all cases, the patients were cannabis-experienced. Indeed, in one study, the authors noted that only cannabis experienced patients were entered into the study in order “to reduce the risk of adverse psychoactive effects in naïve individuals” (Wilsey B, et al, 2008). Therefore, the risk/benefit profile in these patients—particularly the incidence of adverse CNS events--cannot be generalized to cannabis-naïve patients. In fact, in one study, an incident of acute cannabis-induced psychosis occurred in a cannabis-naïve patient, resulting in his withdrawal from the study (Ellis RJ, et al, 2009).

Even among cannabis-experienced patients, the level of adverse events was notable; in one study, cognitive impairment was especially prominent (Wilsey B, et al, 2008). This could suggest that an inhalation mode of delivery may not be optimal. Such rapid delivery of THC may not be necessary in patients with chronic conditions, so long as the dosage form enables patients to titrate their dosing level to individual benefit/tolerability over several days. The cannabis available in these studies was a maximum of 8% THC. In one study, cannabis of only 3.5% generated a significant CNS side effect profile (Abrams DI, et al, 2007). Such CNS side effects would no doubt be even more prevalent if patients were to use higher-potency cannabis, such as that available in dispensaries. Finally, the effectiveness of the blinding is subject to question, since the patients were cannabis-experienced and could be expected to be able to distinguish active from placebo. In the Ellis study, blinding was evaluated; 93% of those patients assigned to receive cannabis accurately guessed that they were on active medication, whereas the patients assigned to placebo generally did not guess correctly (Ellis RJ, et al, 2009).

The results of these studies, while quite interesting, constitute at most the early stages of cannabinoid medication development. Neither the efficacy nor the adverse events in these short-term acute studies can be extrapolated to chronic use. Alone, they could not form the basis of FDA approval, nor of cannabis rescheduling.

Oromucosal/sublingual Cannabis-derived Preparations

Sativex® (nabiximols) is a botanically derived cannabis extract with a defined 1:1 ratio of THC to CBD and delivered as an oromucosal spray.³⁰ Sativex® has shown positive results as an adjunctive treatment in controlled studies involving patients (with previously intractable symptoms who remained on all their existing medications) with brachial plexus avulsion (Berman JS, Symonds C, Birch R, 2004), central neuropathic pain in multiple sclerosis (Rog DJ, Nurmillo T, Friede T, et al, 2005), spasticity in multiple sclerosis (Collins C, Davies P, Mutiboko IK, Ratcliffe S, 2007), rheumatoid arthritis (Blake DR, et al, 2006), peripheral neuropathic pain (Nurmikko TJ, Serpell MC, Hoggart B, et al, 2007), and pain associated with advanced cancer (Johnson JR, Burnell-Nugent M, Lossignol D, et al, 2010).

³⁰ Sativex® is produced by GW Pharmaceuticals in the UK. Nabixomols is the US Adopted Name (USAN).

Interestingly, in the cancer pain study, nabiximols showed statistically significant analgesic effect compared with placebo, whereas a THC-predominant extract did not. This may suggest that the THC: CBD formulation has a different therapeutic impact compared to THC without CBD.

Symptom relief with nabiximols was maintained in long-term studies, without the need for dose escalation (Wade DT, Makela PM, House H, et al, 2006). Patients who abruptly withdrew from nabiximols did not exhibit a cannabis withdrawal syndrome (Budney AJ & Hughes JR, 2006) or any withdrawal symptoms requiring treatment. Intoxication scores remained low, even during dose titration (Wade DT, Makela PM, House H, et al, 2006). Sativex® does not induce psychopathology or impair cognition in cannabis-naïve patients with multiple sclerosis (Aragona M, et al, 2009). By contrast, smoked cannabis produces cognitive impairment in patients with Multiple Sclerosis (Ghaffaro O and Feinstein A, 2008).

Sativex® is approved in the UK, Spain, New Zealand, and Canada as an adjunctive treatment for spasticity in multiple sclerosis and may be available soon thereafter in other European Union countries under harmonized recognition procedures. Canada has also approved it under the Notice of Compliance with Conditions (NOC/c) as an adjunctive treatment for neuropathic pain in multiple sclerosis and for pain associated with advanced cancer pain. In the United States, it is undergoing advanced clinical studies in patients with advanced cancer whose pain has not been adequately relieved by strong (Step III) opioids.

Are There Principled Reasons for Exempting Cannabis from the Quality, Safety, and Efficacy Requirements of the Modern Medication Model?

Is Cannabis Benign?--Risks and Side Effects

Cannabis is not a “harmless herb.” According to the IOM, it is a “powerful drug with a variety of effects” (Joy JE, Watson, Jr. SJ & Benson JA, 1999). To be sure, all medications have potential side effects, some of them quite serious. During the course of controlled clinical trials (both pre- and post-marketing), many of these side effects are identified, and a medication’s benefit/risk profile can thereby be assessed, by both regulatory authorities and the medical profession. Ongoing physician supervision allows these risks to be managed, e.g., by dose adjustment, discontinuation of treatment, or rotation to/augmentation by an alternate or additional medication. Medication labels and inserts apprise patients of probable side effects. For example, patients should be warned of the risks of driving or operating heavy machinery while under the influence of cannabinoids (U.S. National Highway Traffic Safety Administration, 2004; Beirness DJ & Porath-Waller AM, 2009).³¹ Cannabis products distributed by dispensaries lack this information.

A number of side effects may be of particular concern when cannabis is used in significant amounts daily, over a long period, in smoked form, by patients with debilitating

³¹ Inhalation of cannabis produces deficits in tracking, reaction time, visual function, and divided attention.

medical conditions. The acute effects of pure THC and high-THC cannabis that are relevant to medical use include intoxication (including dysphoria), anxiety (including panic attacks), hallucinations and other psychotic-like symptoms, somnolence, confusion, psychomotor impairment, cognitive impairment, dizziness, orthostatic hypotension, dry mouth ³², and tachycardia (Joy JE, Watson, Jr. SJ & Benson JA, 1999). In clinical trials of cannabinoid medications, patients with pre-existing serious mental disorders, significant hepatic or renal impairment, epilepsy, cardiac conditions, or prior substance abuse/dependence are typically excluded. Nevertheless, patients with these conditions are routinely added to the "membership lists" of dispensaries.

The IOM recognized that these acute side effects are "within the risks tolerated for many medications" (Joy JE, Watson, Jr. SJ & Benson JA, 1999). As noted above, however, the side effects of other medications have been identified by means of extensive testing and examination in both nonclinical/preclinical and Phase I-III clinical trials, including large double-blind, placebo-controlled studies. The acute side effects of smoked cannabis have not been fully elucidated through such comprehensive testing. As a result of these potential side effects, which may more severely impact the elderly or those with hepatic or immune impairment, it is imperative that specific cannabis and cannabinoid medications are studied in particular medical conditions and patient populations, and patients using such medications in clinical practice should be properly supervised by their treating physicians. Under the current system in the 15 states that have "medical marijuana" laws, none of this data collection and physician supervision is taking place according to regulatory standards.

The chronic effects of inhaled cannabis are of special concern in the context of medical use. These chronic effects can be placed into several categories: the effects of chronic smoking and the effects of inhaled THC. Patients often use 1-5 grams a day of cannabis; this represents 1-8 cannabis cigarettes (Comeau P, 2007). The remaining patients in the federal Compassionate Use Program are provided with 300 cannabis cigarettes per month.³³

Cannabis smoke contains many of the components of tobacco smoke. Smoking a cannabis cigarette can deposit as much as four times the amount of tar in the lungs, compared to smoking a tobacco cigarette (Wu TC, Tashkin DP, Djahed B, Rose JE, 1988). This effect results from the fact that cannabis cigarettes lack filters and cannabis smokers inhale more deeply and hold their breath longer than tobacco smokers hold theirs (Joy JE,

³² Dry mouth can cause gum disease, tooth decay, and mouth infections, such as thrush.

³³ The National Institute on Drug Abuse (NIDA) supplies cannabis to several patients under a single patient so-called 'compassionate use' Investigational New Drug Applications (IND). In 1978, as part of a lawsuit settlement by the Department of Health and Human Services (DHHS), NIDA began supplying cannabis to patients whose physician applied for and received such an IND from the FDA. In 1992, the Secretary [of Health and Human Services] terminated this practice, but decided that NIDA should continue to supply those patients who were receiving cannabis at the time.
<http://www.drugabuse.gov/about/organization/nacda/MarijuanaStatement.html>

Watson, Jr. SJ & Benson JA, 1999). There is no doubt that chronic cannabis smoking is harmful to the lungs (Tashkin DP, 2005; Diplock J and Plecas D, 2009).³⁴

The inhalation of cannabis also poses a risk of abuse and dependency. As the IOM stated: “Adolescents, particularly those with conduct disorders, and people with psychiatric disorders, or problems with substance abuse appear to be at great risk for marijuana dependence than the general population.” Heavy cannabis use in adolescence is associated with a variety of neurocognitive deficits (Schweinsburg AD, Brown SA & Tapert SF, 2008). The high-potency cannabis now distributed by dispensaries could exacerbate these risks. The fact that adolescents have ready access to cannabis “cards,” without meaningful physician supervision, is particularly problematic.

These concerns are not vitiated by “vaporization,” currently popular with cannabis advocates. First, there are wide varieties of vaporizers available for purchase on the internet and at cannabis dispensaries, although the FDA has approved none of them as a medical device. They vary significantly in the extent to which they reduce toxic combustion products. Even the most sophisticated vaporizer, the Volcano®³⁵, has not been demonstrated to eliminate all polycyclic aromatic hydrocarbons, at least at higher temperatures (Gieringer D, St. Laurent J & Goodrich S, 2004). Even at lower temperatures, ammonia and acetaldehyde have also not been shown to be eliminated (Russo E, 2006; Bloor RN, Wang TS, Spanel P, & Smith D, 2008).³⁶ By contrast, carbon monoxide does not appear to be released by vaporization with the Volcano ® (Abrams DI, et al, 2007).

Second, the products of vaporization are dependent on the quality and composition of the underlying herbal material. If that material is not highly standardized, the composition of the vapor will be uncertain. Because these devices have not been fully tested through the FDA process it is uncertain whether herbal material contaminated with pesticides or microbes would transmit these contaminants into the vapor. Unless the vaporizer device has a lockout mechanism, variability in intra- and inter-patient inhalation patterns may make it unlikely that a known and reproducible dose will be delivered.

Third, vaporization does not improve the side effect profile exhibited by smoked cannabis, including its psychoactive effects. Like smoking, vaporization causes THC plasma levels to rise abruptly (Miller J, Meuwesen I, ZumBrunnen T, & de Vries M, 2005). Rapid delivery of THC to the plasma and brain increases the likelihood of intoxication and abuse liability, and may promote dependency (Samaha AN & Robinson TE, 2005). Again, such

³⁴ In 2009, California’s Office of Environmental Health Hazard Assessment added cannabis smoke to its official list of known carcinogens. See, Tomar RS, Beaumont J, Hsieh JCY. Evidence on the Carcinogenicity of Marijuana Smoke. http://www.oehha.ca.gov/prop65/public_meetings/pdf/cicslides060509.pdf

³⁵ The Volcano® is produced by Storz & Bickel GmbH & Co. KG in Germany. <http://www.storz-bickel.com/vaporizer/storz-bickel-company-vaporizer-manufacturer.html>.

³⁶ It is important that the FDA assess medical devices that deliver vaporization products to the lungs. The FDA has recently warned consumers about the dangers of toxic and carcinogenic chemicals contained in electronic cigarettes, touted as a smoke-free and less harmful alternative to smoking. FDA, FDA News Release, “FDA and Public Health Experts Warn About Electronic Cigarettes.” <http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm173222.htm>

rapid delivery is probably not necessary for patients with chronic conditions so long as the dosage form enables such patients to titrate their dose adequately and predictably (Russo E, 2006).³⁷ For example, rapid onset opioid medications, such as buccal fentanyl, are prescribed for patients with breakthrough pain, not with chronic persistent pain. In fact, patients with such persistent pain are often placed on extended release opioid medications once their individual daily dose is established through short-term release medications.

Finally, when cannabis joints or vaporizers are shared, dangerous pathogens can be spread amongst seriously ill patients (Zanocco V, 2005).

Could a Cannabis Preparation Achieve FDA Approval?

As indicated above, the FDA has set forth the requirements for the development of a botanically based prescription medication. Those agency recommendations require that highly standardized cannabis herbal material (Botanical Raw Material) be developed into a Botanical Drug Substance and ultimately into a Botanical Drug Product. Under the Guidance document, it may be challenging for herbal material—even if standardized—to be approved, since the herbal material must also be incorporated into a defined and reproducible dosage form. As the AMA report recognized, “The future of cannabinoid-based medicine lies in the rapidly evolving field of **botanical drug substance development**, as well as the design of molecules that target various aspects of the endocannabinoid system” (American Medical Association, 2009). Smoked cannabis—particularly for chronic use—would no doubt pose risks that would be unacceptable to the agency. Improvements in vaporization technology would need to occur in order fully to eliminate all toxic combustion products and ensure a standardized and predictable dose.

None of this is impossible. Therefore, the obvious question arises: why, as a policy matter, should herbal cannabis be exempted from the modern medication model? Many new promising medications are under investigation, and suffering patients understandably seek to obtain access to them as early as possible. The FDA has established fast-track procedures³⁸ to facilitate this access, and compassionate access through Treatment INDs is often available during late-stage medication development.³⁹ Both the FDA and the federal courts, however, have concluded that seriously ill—even terminally ill—patients will not benefit on balance from products that have not completed the vast majority of steps leading to an approved medication (Abigail Alliance, 2008). In short, the concept of “medical necessity” is not sufficient to override the provisions of the Food, Drug and

³⁷ Inhaled cannabis has a shorter duration of action than oral or other dosage forms.

³⁸ 21 C.F.R. secs. 312.80, 312.10, 314.500.

³⁹ The FDA may approve use of an investigational drug by patients not part of the clinical trials for the treatment of “serious or immediately life-threatening disease[s]” if there exists “no comparable or satisfactory alternative drug or other therapy,” if the drug is under investigation in a controlled clinical trial, and if the drug’s sponsor is actively pursuing marketing approval of the investigational drug with due diligence. 21 C.F.R. sec. 312.34.

Cosmetic Act (Abigail Alliance, 2008) or the Controlled Substances Act (United States v. Oakland Cannabis Buyers' Cooperative, 2001).

Allowing cannabis to circumvent the requirements of the FDA process sets a dangerous precedent for the future. For example, herbal products called "Spice," "Skunk," and "Sence" are currently becoming popular in the U.S. and Europe. These products contain herbal preparations that are "enriched" with synthetic cannabinoids, such as HU 210, which is much more potent than THC. These synthetic cannabinoids have been developed over the past 30 years for research purposes to investigate the endocannabinoid receptor system in non-human studies. Although these compounds have THC-like properties, they are much more potent than THC. Products containing these synthetic cannabinoids are marketed as "legal" alternatives to cannabis and are being sold over the internet and in tobacco and smoke shops, drug paraphernalia shops, and convenience stores. Could "Spice" advocates in the future contend that these products, too, should be made available to patients and other consumers without being tested through the FDA process? This is, indeed, a dangerously slippery slope.⁴⁰

The Significance of Scheduling

Both the AMA and ACP have recently questioned the status of cannabis's placement in Schedule I of the Controlled Substances Act.⁴¹ Schedule II substances are, for the most part, subject to the same restrictions and requirements under the Controlled Substances Act, including manufacturing and procurement quotas, security measures, recordkeeping, import/export permits, etc. It may be useful, therefore, to examine what the rescheduling of cannabis (presumably to Schedule II) would and would not achieve. Cannabis advocates commonly urge that cannabis be rescheduled "so that it can be made available to patients on prescription." Rescheduling herbal cannabis alone would not, however, be sufficient to create a medication that physicians could prescribe and pharmacists could dispense. In order to be prescribable, any particular medication must have successfully completed the FDA approval process. The FDA does not approve "bulk" substances, such as cannabis (or raw opium or coca leaves), for marketing and direct prescription. Therefore, a specific cannabis-derived medication would have to be developed in accordance with FDA standards, which would require that it be standardized, formulated, tested, and administered in an appropriate delivery system." In order for a Schedule II substance to be made available by prescription, it

⁴⁰ The DEA has recently acted on an emergency basis to place five such compounds in Schedule I. DOJ, DEA, "Schedules of Controlled Substances: Temporary Placement of Five Synthetic Cannabinoids into Schedule I," 75 Fed. Reg. 71636 (Nov. 24, 2010). This action will make possessing and selling these chemicals or the products that contain them illegal in the U.S. for at least one year while the DEA and the United States Department of Health and Human Services (DHHS) further study whether these chemicals and products should be permanently controlled.

⁴¹ Note cannabis is assigned to Schedule I under most state controlled substances laws, including California's.

must be contained in one or more specific dosage forms, as is the case for opium. Each and every one of such dosage forms must pass FDA muster” (Russo E, 2006).⁴²

FDA approval of a specific cannabis Botanical Drug Product would constitute “currently accepted medical use in the US,” thereby allowing that medication to be rescheduled into Schedule II or below (*Grinspoon v. DEA*, 1984).⁴³ Such FDA approval, however, would not necessarily require the rescheduling of bulk cannabis, despite the fact that opium and coca leaves are in Schedule II. Although the Controlled Substances Act schedules apply to classes of substances, rather than specific medications, precedent has developed for “differential scheduling.” For example, synthetic dronabinol, in a specific FDA-approved formulation, is listed in Schedule III, while pure THC in any other form remains in Schedule I.⁴⁴ Similarly, Xyrem®, an approved treatment for narcolepsy, is classified in Schedule III, while “street” versions of GHB remain in Schedule I (Neuman A, 2004). Therefore, if such a specific cannabis medication were approved by the FDA and rescheduled by the DEA, bulk herbal cannabis could still remain in Schedule I.

Rescheduling of cannabis would also not allow pharmacists to compound cannabis products for large numbers of patients. The FDA has issued numerous warning letters to compounding pharmacists, emphasizing that:

The drugs that pharmacists compound are not FDA-approved and lack an FDA finding of safety and efficacy, however, FDA has long recognized the important public health function served by traditional pharmacy compounding. FDA regards traditional compounding as the extemporaneous combining, mixing, or altering of ingredients by a pharmacist in response to a physician's prescription to create a medication tailored to the specialized needs of an individual patient. See *Thompson v. Western States Medical Center*, 535 U.S. 357, 360-61 (2002). ***Traditional compounding typically is used to prepare medications that are not available commercially, such as a drug for a patient who is allergic to an ingredient in a mass-produced product or diluted dosages for children.***

Through the exercise of enforcement discretion, FDA historically has not taken enforcement actions against pharmacies engaged in traditional pharmacy compounding. Rather, FDA has directed its enforcement resources

⁴² Interestingly, one prominent cannabis advocate, who has filed cannabis rescheduling actions, **does not contend** that rescheduling would make cannabis prescribable to patients. Gettman J. “Frequently Asked Questions about Medical Cannabis and Rescheduling.” http://www.drugscience.org/lib/freq_qst.html.

⁴³ As noted above, fn 14, delineating the criteria that must be met in order for a substance to have a “currently accepted medical use in the US.” These criteria can only be satisfied by a robust body of scientific data, not by the enactment of state laws that decriminalize the use of cannabis for medical purposes. US Department of Justice, DEA, letter to Carl Olsen (Dec. 19, 2008) (denying a petition for rescheduling). http://www.iowamedicalmarijuana.org/petitions/pdfs/dea_20081219.pdf

⁴⁴ The DEA has recently issued a Notice of Proposed Rulemaking (NPRM) proposing to transfer certain generic dronabinol products to Schedule III. DOJ, DEA, “Listing of Approved Drug Products Containing Dronabinol in Schedule III,” 75 Fed. Reg. 67054 (Nov. 1, 2010).

against establishments whose activities raise the kinds of concerns normally associated with a drug manufacturer and whose compounding practices result in significant violations of the new drug, adulteration, or misbranding provisions of the FDCA (FDA, Compliance Policy Guide, 2002; FDA, Warning Letter, 2006).

Rescheduling cannabis would not automatically reduce or otherwise affect federal criminal penalties for possession or trafficking. These statutes provide specific penalties for marijuana or for possessing a controlled substance without a lawful prescription.⁴⁵ Such statutes would require separate amendment in order for existing penalties to be modified, and this amendment process would involve different policy factors and considerations.

Cannabis rescheduling would also not necessarily allow the establishment of additional cannabis cultivation facilities to produce cannabis for research purposes. The United States is a signatory to the Single Convention on Narcotic Drugs 1961. That treaty requires that cannabis cultivated within the U.S. borders must be delivered to a national agency. In the US, the national agency is the National Institute on Drug Abuse (NIDA). NIDA has the exclusive authority over importing, exporting, wholesale trading, and maintaining stocks (Single Convention on Narcotic Drugs, 1961).⁴⁶ Only the University of Mississippi, under contract with NIDA, currently cultivates cannabis for research purposes (NIDA, 1997). The mandates of the treaty are not affected by cannabis's scheduling under US domestic law.⁴⁷

There is one respect, however, in which the rescheduling of cannabis could facilitate research. If a physician-investigator possesses a registration (the CSA term for a license) to dispense an FDA-approved Schedule II controlled substance, he or she may conduct research on any Schedule II substance, as a "coincident activity" to his/her registration to dispense, without the need to obtain a separate research registration from the DEA. (Of course, any such research would still need to be approved by the FDA and an appropriate institutional review board, as well as perhaps by a state regulatory body.⁴⁸ By contrast, a separate registration is required for Schedule I research.⁴⁹ In addition, each registration is protocol-specific. If a researcher wishes to conduct a different study on the same Schedule I substance, he/she must obtain a separate registration. Furthermore, a Schedule II practitioner registration must be renewed every three years; whereas a Schedule I research registration must be renewed annually. Thus, any delays associated with obtaining and renewing a Schedule I research registration could be obviated by the rescheduling of cannabis to Schedule II. This situation, however, could also be resolved by a more limited statutory and regulatory change that permitted practitioners with Schedule II

⁴⁵See, e.g., 21 U.S.C. secs. 841,844.

⁴⁶ There is an exception for stocks held by manufacturers of pharmaceutical preparations. Art. 23, para. 2(e).

⁴⁷ For fuller discussion of the requirements of the Single Convention, see Department of Justice, DEA, Lyle E. Craker; Denial of Application, 74 *Fed. Reg.* 2101 (Jan. 14, 2009).

⁴⁸ 21 U.S.C. sec. 823(f); 21C.F.R. secs.1301.13.

⁴⁹ 21 C.F.R. sec.1301.18.

registrations to conduct Schedule I cannabis/cannabinoid research as a coincident activity to their existing registrations.

Conclusions

“Cognitive dissonance” is a term that aptly describes the current approach to “medical marijuana.” Scientists recognize the public health harms of tobacco smoking and urge our young people to refrain from the practice, yet most cannabis consumers use smoking as their preferred delivery mechanism. The practice of medicine is increasingly evidence-based, yet some physicians are willing to consider “recommending” cannabis to their patients, despite the fact that they lack even the most rudimentary information about the material currently being consumed by patients (composition, quality, and dose, and no controlled studies provide information on its benefit and safety of its use in chronic medical conditions). Pharmaceutical companies are responsible for the harms caused by contaminated or otherwise dangerous products and tobacco companies can be held accountable for harms caused by cigarettes, yet, dispensaries distribute cannabis products about which very little are known, including their source. Efforts are being made to stem the epidemic of prescription drug abuse, including FDA-mandated risk management plans required for prescription medications, yet cannabis distribution sites proliferate in many states, virtually without regulation.

In order to think clearly about “medical marijuana,” one must distinguish first between 1) the therapeutic potentials of specific chemicals found in marijuana that are delivered in controlled doses by nontoxic delivery systems, and 2) smoked marijuana.

Second, one must consider the drug approval process in the context of public health, not just for medical marijuana but also for all medicines and especially for controlled substances. Controlled substances are drugs that have recognized abuse potential. Marijuana is high on that list because it is widely abused and a major cause of drug dependence in the United States and around the world. When physicians recommend use of scheduled substances, they must exercise great care. The current pattern of “medical marijuana” use in the United States is far from that standard.

If any components of marijuana are ever shown to be beneficial to treat any illness then physicians should prescribe those components by nontoxic routes of administration in controlled doses just all other medicines are in the U.S.

In order for physicians to fulfill their professional obligations to patients, and in order for patients to be offered the high standard of medical care that we have come to expect in the United States, cannabis-based medications must meet the same exacting standards that we apply to other prescription medicines. Members of the American Society of Addiction Medicine are physicians with expertise in addiction medicine with knowledge specific to the risks associated with the use of substances with high abuse potential. ASAM must stand strongly behind the standard that any clinical use of a controlled substance

must meet high standards to protect the patient and the public; the approval of “medical marijuana” does not meet this standard.

Recommendations

ASAM asserts that cannabis, cannabis-based medications, and cannabis delivery devices should be subject to the same standards that are applicable to other prescription medications and medical devices and that these medications or devices should not be distributed or otherwise provided to patients unless and until such medications or devices have received marketing approval from the Food and Drug Administration.

ASAM recommends its members and other physician organizations and their members reject responsibility for providing access to cannabis and cannabis-based medications until such time that these materials receive marketing approval from the Food and Drug Administration.

ASAM rejects smoking as a means of drug delivery since it is inherently unsafe.

ASAM supports the need for federal regulatory standards for drug approval and distribution. ASAM recognizes that states can enact limitations that are more restrictive but rejects the concept that states could enact more permissive regulatory standards. ASAM discourages state interference in the federal medication approval process.

ASAM rejects a process whereby State and local ballot initiatives approve medicines because these initiatives are being decided by individuals not qualified to make such decisions (based upon a careful science-based review of safety and efficacy, standardization and formulation for dosing, or provide a means for a regulated, closed system of distribution for marijuana which is a CNS drug with abuse potential).

ASAM asserts that physician organizations operating in states where physicians are placed in the gate-keeping role have an obligation to help licensing authorities assure that physicians who choose to discuss the medical use of cannabis and cannabis-based products with patients:

- Adhere to the established professional tenets of proper patient care, including
 - History and good faith examination of the patient;
 - Development of a treatment plan with objectives;

- Provision of informed consent⁵⁰, including discussion of risks, side effects, and potential benefits;
 - Periodic review of the treatment's efficacy;
 - Consultation, as necessary; and
 - Proper record keeping that supports the decision to recommend the use of cannabis
- Have a *bona fide* physician-patient relationship with the patient, i.e., should have a pre-existing and ongoing relationship with the patient as a treating physician⁵¹;
 - Ensure that the issuance of “recommendations” is not a disproportionately large (or even exclusive) aspect of their practice;
 - Not issue a recommendation unless the physician has adequate information regarding the composition and dose of the cannabis product;
 - Have adequate training in identifying substance abuse and addiction⁵².

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⁵⁰ If a physician recommends the use of cannabis for a minor, parents and/or legal guardians must be fully informed of the potential risks and benefits of such use and must consent to that use.

⁵¹ This provision may be modified if the prescribing physician is a *bona fide* consultant brought into the care of a patient by the physician with whom the patient has a relationship. This further defines how to view and evaluate the actions of the physician who holds her/himself out as an expert in cannabis medical care who has no connection to the primary physician of the patient for whom crude cannabis is recommended.

⁵² This is particularly germane to the ASAM which consists of physicians knowledgeable in drug abuse and addiction and who advocate to ensure that all physicians have the knowledge to manage CNS medications responsibly in the general patient population and can identify and treat or refer for treatment cases of abuse and dependence to psychoactive substances.

References

Abigail Alliance for Better Access to Developmental Drugs and Washington Legal Foundation

v. von Eschenbach, 495 F.3d 695 (D.C. Cir. 2007) cert. den. 128 S. Ct. 1069 (2008).

Abrams DI, Jay MD, Shade SB, et al. Cannabis in painful HIV-associated sensory neuropathy: a randomized placebo-controlled trial. *Neurology* 2007; 68(7):515-521.

Abrams DI, Hilton JF, Leiser RJ, et al. Short-term effects of cannabinoids in patients with HIV-1 infection: a randomized, placebo-controlled clinical trial. *Ann Intern Med* 2003; 139(4):258-266.

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

American College of Physicians. Supporting Research into the Therapeutic Role of Marijuana. Philadelphia: American College of Physicians; 2008: Position Paper. (Available from American College of Physicians, 190 N. Independence Mall West, Philadelphia, PA 19106.)
[http://www.acponline.org/advocacy/where we stand/other issues/medmarijuana.pdf](http://www.acponline.org/advocacy/where_we_stand/other_issues/medmarijuana.pdf)

American Nurses Association. Ethics and human rights. (2008, December 12) Retrieved December 29, 2009 from <http://www.nursingworld.org/EthicsHumanRights>.

Aragona M, Onesti E, Tomassini V, et al. Psychopathological and cognitive effects of therapeutic cannabinoids in multiple sclerosis: A double-blind, placebo controlled, crossover study. *Clin Neuropharm* 2009; 32(1):41-47.

Beaulieu P. Effects of nabilone, a synthetic cannabinoid, on postoperative pain. *Can J Anesth* 2006; 53(8):769-775.

Beirness DJ, Porath-Waller AM. Cannabis use and driving. *Clearing the Smoke on Cannabis*. Canadian Centre on Substance Abuse. 2009. Available at: www.ccsa.ca.

Belle-Isle L, Hathaway A. Barriers to access to medical cannabis for Canadians living with HIV/AIDS. *AIDS Care* 2007; 19(4):500-506.

Ben Amar M. Cannabinoids in medicine: A review of their therapeutic potential. *J Ethno-Pharmacol* 2006; 105:1-25.

Berman JS, Symonds C, Birch R. Efficacy of two cannabis based medicinal extracts for relief of central neuropathic pain from brachial plexus avulsion: results of a randomized controlled trial. *Pain* 2004; 112:299-306.

Blake DR, Robson P, Ho M, Jubbs RW, McCabe CS. Preliminary assessment of the efficacy, tolerability and safety of a cannabis-based medicine (Sativex) in the treatment of pain caused by rheumatoid arthritis. *Rheumatology* (Oxford) 2006; 45:50-2.

Brown D. The New Science of Cannabinoid-Based Medicine: An Interview with Dr. Raphael Mechoulam, www.mavericksofthemind.com, Copyright 2005-6, Smart Publications.

Budney A, Hughes JR, Moore BA, Vandrey R. Review of the Validity and Significance of Cannabis Withdrawal Syndrome. *Am J Psychiatry* 2004; 161:1967-1977.

Budney AJ, Hughes JR. The cannabis withdrawal syndrome. *Curr Opin Psychiatry* 2006; 19:233-238.

Buggy DJ, Toogood L, Maric S, Sharpe P, Lambert DG, Rowbotham DJ. Lack of analgesic efficacy of oral delta-9-tetrahydrocannabinol in postoperative pain. *Pain* 2003; 106:169-172.

California Attorney General, Guidelines for the Security and Non-diversion of Marijuana Grown for Medical Use. 2008. Available at:
http://ag.ca.gov/cms_attachments/press/pdfs/n1601_medicalmarijuanaguidelines.pdf.

California Sherman Food, Drug, and Cosmetic Act. Health & Safety Code secs. 109875-111915.

Canadian Medical Association, http://www.cma.ca/index.php?ci_id=3396&la_id=1 (2001).

Canwest News Service, “New Rules ‘slap in the face’: Medical marijuana advocates.” The Gazette

<http://www.montrealgazette.com/health/watchdog+takes+Canada+medical+marijuana+program/2611923/Laws+ineffective+curbing+cannabis+Experts/2485837/rules+slap+face+Medical+marijuana+advocates/1632440/story.html> (2010).

Center for Medicinal Cannabis Research. Report to the Legislature and Governor of the State of California presenting findings pursuant to SB 847 that created the CMCR and provided state funding. 2010. Available at:
http://www.cmcr.ucsd.edu/CMCR_REPORT_FEB17.pdf

Chhatwal JP, Davis M, Maguschak KA, and Ressler KJ. Enhancing cannabinoid neurotransmission augments the extinction of conditioned fear. *Neuropsychopharmacology* 2005;30(3): 516-24.

Cohen PJ. The Dietary Supplement Health and Education Act: Regulation at a Crossroads. *Am J L and Med* 2005;31:175.

Collin C, Davies P, Mutiboko IK, Ratcliffe S. Randomized controlled trial of cannabis-based medicine in spasticity caused by multiple sclerosis. *Eur J Neu.* 2007; 14:290-296.

Comeau P. New dosage limits for medical marijuana: But where's the science? CMAJ 2007; 177(6).

Conant v. Walters, 309 F.3d 629 (9th Cir. 2002).

Council on Science and Public Health Report 3. Use of cannabis for medicinal purposes.

American Medical Association, Interim Meeting, Houston, Texas; November 2009.

Available at:

<http://www.ama-assn.org/ama1/pub/upload/mm/38/i-09-csaph-reports.pdf>

Council on Scientific Affairs Report 6. Medical marijuana. American Medical Association, Annual Meeting, Chicago, Illinois; June 2001.

Council on Scientific Affairs Report 10. Medical marijuana. American Medical Association, Interim Meeting, Dallas, Texas; December 1997.

Department of Health and Human Services (DHHS), Food and Drug Administration (FDA).

Draft Guidance for Industry on Assessment of Abuse Potential of Drugs. 75 Fed. Reg. 4400; Jan. 27, 2010.

Department of Health and Human Services (DHHS), Food and Drug Administration (FDA).

Draft Guidance for Industry: Format and Content of Proposed Risk Evaluation and

Mitigation Strategies (REMS), REMS Assessments, and Proposed REMS Modifications. 74 Fed. Reg. 50801 9; Oct. 1. 2009.

Department of Justice (DOJ), Drug Enforcement Administration (DEA). Authorized Sources of Raw Materials. 73 *Fed. Reg.* 6843; February 6, 2008. Department of Justice (DOJ), Drug Enforcement Administration (DEA), "Listing of Approved Drug Products Containing Dronabinol in Schedule III," 75 Fed. Reg. 67054 (Nov. 1, 2010).

Department of Justice (DOJ), Drug Enforcement Administration (DEA). "Schedules of Controlled Substances: Temporary Placement of Five Synthetic Cannabinoids into Schedule I," 75 Fed. Reg. 71636 (Nov. 24, 2010).

Devane WA, Hanus L, Breuer A, , et al. Isolation and structure of a brain constituent that binds to the cannabinoid receptor. *Science* 1992; 258(5090):1946-9.

Dietary Supplement Health and Education Act of 1994 (DSHEA), Pub. L. No. 103-417, 208 Stat. 4325 (codified as amended in scattered sections of 21 U.S.C. sec. 301-399) (2000).

DiForti M, Morgan C, Dazzan P, et al. High-potency cannabis and the risk of psychosis. *Br J Psych* 2009; 195:488-491.

Diplock J, Plecas D. Respiratory effects of cannabis smoking. *Clearing the Smoke on Cannabis*. Canadian Centre on Substance Abuse. 2009. Available at: www.ccsa.ca.

Drug Enforcement Administration. DEA Statement on New Department of Justice Marijuana Guidelines. Available at: www.justice.gov/dea/pubs/pressrel/pr102209.html.

Educating Voices. The Potential Medical Liability for Physicians Recommending Marijuana as Medicine. July 2003. Available at:
http://www.educatingvoices.org/EVI_WhitePaper1.pdf.

Edwards S. UN watchdog takes aim at Canada's medical marijuana program. *The Gazette* February 25, 2010. Available at:
<http://www.montrealgazette.com/health/watchdog+takes+Canada+medical+marijuana+program/2611923/story.html>.

Ellis RJ, Toperoff W, Vaida F, et al. Smoked medicinal cannabis for neuropathic pain in HIV: a randomized, crossover clinical trial. *Neuropsychopharm* 2009; 34(3):672-680.

Fankhauser M. History of cannabis in Western Medicine. In: Grotenhermen F & Russo E (Editors), *Cannabis and Cannabinoids*. New York: The Haworth Integrative Healing Press, New York, 2002:37-51.

Food and Drug Administration (FDA). Compliance Policy Guide, sec. 460.200 (“Pharmacy Compounding”), 67 Fed. Reg. 39, 409. June 7, 2002.

Food and Drug Administration (FDA). FDA Acts to Remove Ephedra Containing Dietary Supplements from Market.

<http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/2004/ucm108379.htm> (Nov. 23, 2004).

Food and Drug Administration (FDA). Guidance for Industry: Botanical Drug Products.

2004. Available at: <http://www.fda.gov/cder/guidance/index.htm>.

Food and Drug Administration (FDA), Inter-Agency Advisory Regarding Claims That

Smoked Marijuana Is a Medicine. April 20, 2006. Available at:

<http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/2006/ucm108643.htm>.

Food and Drug Administration (FDA). Warning Letter: Hal’s Compounding Pharmacy, Inc.

December 4, 2006. Available at:

<http://www.fda.gov/ICECI/EnforcementActions/WarningLetters/2006/ucm076195.htm> (emphasis added).

<http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/ucm124736.pdf>.

Gardner F. What have California Doctors Learned About Cannabis. *Counterpunch* October 23, 2006. Available at: <http://www.counterpunch.org/gardner10232006.html>

Gardner F, Weirick J. Death of an Organizer. *CounterPunch*. October 2005. Available at: <http://www.counterpunch.org/gardner10292005.html>

Garrett ER, Hunt CA. Physicochemical properties, solubility, and protein binding of delta9-THC. *J Pharm Sci* 1974; 63:1056-1064.

Ghaffaro, O & Feinstein A. Multiple Scherosis and Cannabis. *Neurology* 2008; 71(3):164-169.

Grinspoon v. DEA, (1st Cir. 1987) 828 F.2d 881,890, citing H.R. Rep. No. 534, 98th Cong. 2d Sess. 4 (1984), reprinted in 1984 U.S. Code Cong. & Admin. News 540,543.

Guzman M. Cannabinoids: potential anticancer agents. *Nat Rev Cancer* 2003; 3: 745-755.

Guzman M, Duarte MJ, Blazquez C, et al. A pilot clinical study of Δ^9 -tetrahydrocannabinol in patients with recurrent glioblastoma multiforme. *Br J Cance*. 2006; 95: 197-203.

GW Pharmaceuticals. FDA Accepts Investigations New Drug (IND) Application for Sativex®. January 4, 2006. Available at: <http://www.gwpharm.com/fda-accepts-application.aspx>.

Hamilton HC, Lescohier AW, & Perkins RA. The physiological activity of cannabis sativa. *J Amer Pharm Assn* 1913; II:311-323. Reprinted in: Mikuriya TW (ed.). *Marijuana Medical Papers 1839-1972*, 1973.

Haney M, Rabkin J, Gunderson E, Foltin RW. Dronabinol and marijuana in HIV(+) marijuana smokers: acute effects on caloric intake and mood. *Psychopharm (Berl)* 2005; 181(1):70-178.

Hazekamp A. An evaluation of the quality of medicinal grade cannabis in the Netherlands. *Cannabinoids* 2006; 1(1):1-9.

Hazekamp A, Grotenhermen F. Review on clinical studies with cannabis and cannabinoids 2005-2009. *Cannabinoids* 2010; 5(special issue):1-21.

Health Canada. Information for Health Care Professionals. 2003 Available at: <http://www.hc-sc.gc.ca/dhp-mps/marihuana/how-comment/medpract/infoprof/index-eng.php>.

Health Canada. Marihuana Medical Access Regulations. 2001 Available at: <http://www.hc-sc.gc.ca/dhp-mps/marihuana/law-loi/acts-reg-loi-eng.php>.

Health Canada. Product information Sheet on Dried Marihuana (Cannabis). 2008.

Available at: <http://www.hc-sc.gc.ca/dhp-mps/marihuana/supply-approvis/index-eng.php>. Information for Health Care Professionals. 2003. Available at: <http://www.hc-sc.gc.ca/dhp-mps/marihuana/how-comment/medpract/infoprof/index-eng.php>

Herkenham M, Lynn AB, Little MD, et al. Cannabinoid receptor localization in brain. *Proc Natl Acad Sci USA* 1990; 87(5):1932-6.

Holdcroft A, Maze M. A multicenter dose-escalation study of the analgesic and adverse effects of an oral cannabis extract (Cannador) for postoperative pain management. *Anesth.* 2006; 104:1040-6.

Howlett AC. Pharmacology of cannabinoid receptors. *Annu Rev Pharmacol Toxicol* 1995; 35: 607-34.

Huestis MA. Human cannabinoid pharmacokinetics. *Chem & Bio* 2007;4:1770-1804.

Huestis MA, Henningfield JE, Cone EJ. Blood cannabinoids. 1. Absorption of THC and formation of 11-OH-THC and THCCOOH during and after smoking marijuana. *J Anal Tox.* 1992; 16(5): 276-282.

Ibrahim, MM, Deng H, Zvonok A, Activation of CB2 cannabinoid receptors by AM1241 inhibits experimental neuropathic pain: pain inhibition by receptors not present in the CNS. *Proc Natl Acad Sci USA* 2003;100(18): 10529-33.

Jatoi A, Windschitl HE, Loprinzi CL, Dronabinol versus megestrol acetate versus combination therapy for cancer-associated anorexia: a North central cancer treatment group study. *J of Clin Onc* 2002; 20:567-573.

Johnson JR, Burnell-Nugent M, Lossignol D, Ganae-Motan ED, Potts R, Fallon MT. Multicenter, double-blind, randomized, placebo-controlled, parallel-group study of the efficacy, safety, and tolerability of THC:CBD extract and THC extract in patients with intractable cancer-related pain. *J Pain Symptom Manage* Feb 2010; 39(2):167-179.

Joy JE, Watson, Jr., SJ, & Benson, JA (Eds). Marijuana and Medicine: Assessing the Science Base. Division of Neuroscience and Behavioral Health. Institute of Medicine. Washington, DC: National Academy Press, 1999:126, 205-6.

Karniol IG, Carlini EA. Pharmacological interaction between cannabidiol and Δ^9 -tetrahydrocannabinol. *Psychopharm* 1973;33:53-70.

Karniol IG, Shirakawa I, Kasinski N, Pfeferman A, Carlini EA. Cannabidiol interferes with the effects of Δ^9 -tetrahydrocannabinol in man. *Eur J Pharm* 1974; 28:172-177.

Marsicano G, Wotjak CT, Azad SC, et al. The endogenous cannabinoid system controls extinction of aversive memories. *Nature* 2002;418(6897):530-4.

Mathews AW. Is Marijuana a Medicine? *The Wall Street Journal*. Jan. 18, 2010.

McCarberg WH & Barkin RL. The Future of Cannabinoids as Analgesic Agents: A Pharmacologic, Pharmacokinetic, and Pharmacodynamic Overview *American Journal of Therapeutics* 2007; 14(5); 475-483,476.

Mechoulam R, Gaoni Y. A total synthesis of Δ^9 -1-tetrahydrocannabinol, the active constituent in hashish. *J. Am. Chem. Soc.* 1965; 87: 3273-3275.

Mechoulam R, Maximillian P, Murillo-Rodriguez E, Hannus LO. Cannabidiol—Recent Advances. *Chem & Biodiv* 2007; 4:1678-1692.

Medical Board of California. In the Matter of the Accusation and Petition to Revoke Probation Against: Hany Assad, MD. October 2009. Available at:

<http://licenselookup.mbc.ca.gov/licenselookup/lookup.php?LicenseType=A&LicenseNumber=54309>.

Medical Board of California, Medical Marijuana. 2004. Available at:

www.medbd.ca.gov/Medical_Marijuana.html

Medical Marijuana' Guidelines Don't Impact DOT Drug Testing," Land Line Oct. 22, 2009;

http://www.landlinemag.com/todays_news/Daily/2009/Oct09/101909/102209-06.htm

Meiri E, Jhangiani H, Vredenburg JJ, et al. Efficacy of dronabinol alone and in combination with ondansetron versus ondansetron alone for delayed chemotherapy-induced nausea and vomiting. *Curr Med Res Opin* 2007; 23(3):533-543.

Miller J, Meuwesen I, ZumBrunnen T, de Vries M. A Phase I evaluation of pulmonary dronabinol administered via a pressurized metered dose inhaler in healthy volunteers. Paper presented at: American Academy of Neurology; April 14, 2005; Miami Beach, FL.

Munro S, Thomas KL, Abu-Shaar M. Molecular characterization of a peripheral receptor for cannabinoids. *Nature* 1993; 365 (6441):61-5.

National Center on Addiction and Substance Abuse. Non-Medical Marijuana III: Rite of Passage or Russian Roulette? June 2008. Available at:
http://www.casacolumbia.org/templates/publications_reports.aspx?keywords=marijuana.

National Institutes of Health. Workshop on the Medical Utility of Marijuana. 1997.
Retrieved December 29, 2009 from
<http://www.nih.gov/news/medmarijuana/MedicalMarijuana.htm>.

Neuman A. GHB's Path to Legitimacy: An Administrative and Legislative History of Xyrem. (LEDA Harvard Law School) April 2004. Available at:
<http://leda.law.harvard.edu/leda/data/629/Neuman.html>.

NIDA. Provision of marijuana and other compounds for scientific research—
Recommendations of the National Institute on Drug Abuse National Advisory
Council. January 1997.

Noyes Jr. R, Brunk SF, Avery DH, Canter A. The analgesic properties of delta-9-tetrahydrocannabinol and codeine. *Clin Pharm and Therap* 1975; 15:139-143.

Noyes Jr. R, Brunk SF, Baram DA, Canter A. Analgesic effects of delta-9-tetrahydrocannabinol. *J of Clin Pharm* 1975; 18:84-89.

Nurmikko TJ, Serpell MG, Hoggart B., Toomey PJ, Morlion BJ, Haines D. Sativex successfully treats neuropathic pain characterized by allodynia: A randomized, double-blind, placebo-controlled clinical trial. *Pain* 2007; 133(1):210-20.

O'Connell TJ, Bou-Matar CB. Long term marijuana users seeking medical cannabis in California (2001-2007): demographics, social characteristics, patterns of cannabis and other drug use of 4117 applicants. *Harm Reduction Journal* 2007; 4:16.

Office of National Drug Control Policy. Marijuana Legalization; A Nonstarter. 2009

Available at:

www.whitehousedrugpolicy.gov/news/press09/marijuana_legalization.pdf

O'Shaughnessy WB. On the preparation of the Indian hemp or gunjah (*Cannabis indica*): the effects on the animal system in health and their utility in the treatment of tetanus and other convulsive diseases. *Trans. Med. Phys. Soc. Bengal* 1838-1840; 8: 421-461, reprinted in Mikuriya TH (ed.) *Marijuana Medical Papers 1839-1972*, 1973.

People v. Hemp Factory V et al, No. BC 424881 (Cal. Sup. Ct. Oct. 30, 2009). Memorandum of Points & Authorities in Support of Plaintiff's Application for Temporary Restraining Order, Order to Show Cause Re Preliminary Injunction and Preliminary Injunction.

Pertwee RG. The Pharmacology and Therapeutic Potential of Cannabidiol. In: DiMarzo V, editor. *Cannabinoids*. Dordrecht, Netherlands: Kluwer Academic Publishers; 2004.

Physicians for a Smoke-Free Canada. Health Canada's Policies on Marijuana Put Patients at Risk. January 2002. 1226A Wellington Street, Ottawa, Ontario K1Y 3A1 Available at: http://www.smoke-free.ca/pdf_1/psc-position-on-marijuana.PDF

Potter DJ, Clark P, Brown MB. Potency of Δ^9 -THC and other cannabinoids in cannabis in England in 2005: Implications for psychoactivity and pharmacology. *J Forensic Sci* 2008; 53(1):90-95.

Quartilho A, Mata HP, Ibrahim MM, et al. Inhibition of inflammatory hyperalgesia by activation of peripheral CB2 cannabinoid receptors. *Anesthesiology* 2003;99(4): 955-60.

Rog DJ, Nurmikko T, Friede T, et al. Randomized controlled trial of cannabis based medicine in central neuropathic pain due to multiple sclerosis. *Neurology* 2005; 65:812-19.

Romera J. Effect of chronic exposure to delta9-tetrahydrocannabinol on cannabinoid receptor binding and mRNA levels in several rat brain regions. *Brain Res Mol Brain Res* 1997 Jun; 46(1-2):100-8.

Russo E. The Solution to the Medicinal Cannabis Problem. *Ethical Issues in Chronic Pain Management* (Schatman ME and Gant BL eds.) Taylor & Francis: Boca Raton, FL, 2006.

Russo E, Guy GW. A tale of two cannabinoids: The therapeutic rationale for combining tetrahydrocannabinol and cannabidiol. *Med Hypoth* 2006; 66: 234-246.

Russo EB. Cannabinoids in the management of difficult to treat pain. *Ther And Clin Risk Manage* 2008; 4(1):245-259.

Russo EB. History of cannabis and its preparations in saga, science, and sobriquet. *Chem. & Biodiversity* 2007; 4:1614-1648, pp.1620, 1628.

Samaha AN and Robinson TE. Why does the rapid delivery of drugs to the brain promote addiction? *Trends in Pharmacological Sciences* 2005; 26(2):82-87.

Schweinsburg AD, Brown SA, Tapert SF. The influence of marijuana use on neurocognitive functioning in adolescents. *Curr Drug Abuse Rev* 2008; 1(1):99-111.

Single Convention on Narcotic Drugs 1961, art. 23, 28. 18 U.S.T. 1407. There is an exception for stocks held by manufacturers of pharmaceutical preparations. Art. 23, para. 2(e).

Sterling E. Why “good” old fashioned Cannabis didn’t cause psychosis. Sterling on Justice & Drugs. January 22, 2010. Available at:

<http://justiceanddrugs.blogspot.com/2010/01/why-good-old-fashioned-cannabis-didnt.html>.

Strasser F, Luftner D, Possinger K, et al. Comparison of orally administered cannabis extract and delta-9-tetrahydrocannabinol in treating patients with cancer-related anorexia-cachexia syndrome: A multicenter, Phase III, randomized, double-blind, placebo-controlled clinical trial from the Cannabis-In-Cachexia_Study_Group. *J Clin Oncol* 2006; 24(21):3394-3400.

Svendsen KB, Jensen TS, Bach FW. Does the cannabinoid dronabinol reduce central pain in multiple sclerosis? Randomized double blind placebo controlled crossover trial. *BMJ* 2004; 329: 253.

Tashkin DP. Smoked marijuana as a cause of lung injury. *Monaldi Arch Chest Dis* 2005; 63(2):93-100.

Thurstone C. Smoke and mirrors: Colorado teenagers and marijuana. *Denver Post* Feb. 10, 2010.

US Department of Justice, Memorandum for Selected United States Attorneys (October 19, 2009) <http://blogs.usdoj.gov/blog/archives/192>

U.S. National Highway Traffic Safety Administration. Drugs and Human Performance Fact Sheets: Cannabis/Marijuana (Δ^9 -Tetrahydrocannabinol, THC). 2004. Available at: <http://www.nhtsa.dot.gov/people/injury/research/job185drugs/cannabis.htm>

US v. Oakland Cannabis Buyers Cooperative, 532 U.S. 483 (2001).

Varvel SA, Wise LE, Niyuhire F, Cravatt BF, and Lichtman AH. Inhibition of fatty-acid amide hydrolase accelerates acquisition and extinction rates in a spatial memory task. *Neuropsychopharmacology* 2007; 32(5):1032-41.

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

Wallace M, Schulteis G, Atkinson JH, et al. Dose-dependent effects of smoked cannabis on capsaicin-induced pain and hyperalgesia in healthy volunteers. *Anesth* 2007; 107: 785-796.

Walton RP. Marijuana: therapeutic application. *Marijuana: America's New Drug Problem*, JB Lippincott, 1928:151-157. Reprinted in: Mikuriya TW (ed.). *Marijuana Medical Papers 1839-1972*, 1973.

Wharry S. CMPA warns doctors of risks associated with prescribing marijuana. *CMAJ* January 8, 2002;166(1): 83; CMPA, "Medical marijuana: Update for physicians who complete a medical declaration under the Marihuana Medical Access Regulations," (revised May 2008). Available at: https://www.cmpa-acpm.ca/cmpapd04/docs/resource_files/infoletters/2005/com_il0540_2-e.cfm (accessed Feb. 22, 2010).

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

Wissel J, Haydn T, Muller J, et al. Low dose treatment with the synthetic cannabinoid Nabilone significantly reduces spasticity-related pain. *J Neurol* 2006; 253(10):1337-1341.

Wu TC, Tashkin DP, Djahed B, Rose JE. Pulmonary hazards of smoking marijuana as compared with tobacco. *N Eng J Med* 1988; 318:347-351.

Zajicek J, Fox P, Sanders H, et al. Cannabinoids for treatment of spasticity and other symptoms related to multiple sclerosis (CAMS study): multicenter randomized placebo-controlled trial. *The Lancet* 2003; 362: 1517-1526.

Zajicek JP, Sanders HP, Wright DE, et al. Cannabinoids in multiple sclerosis (CAMS) study: safety and efficacy data for 123 months follow up. *J of Neurol, Neurosurgery and Psych* 2005; 76:1664-1669.

Zanocco V. Meningococcal cases linked by sharing joints. Vancouver, BC, Canada:

Vancouver Coastal Health; 2005. Available at:

http://www.vch.ca/news/docs/2005_04_07_mening_joints.pdf.

Mingling Activism with Policy Influence: Harm Reduction Ideology and the Politicisation of Canadian Drug Policy

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Abstract

This paper will address aspects of Canadian drug policy as it has been influenced by activism. With many choices of focus, it will concentrate on the rise of harm reduction first as a needed partner to treatment and prevention, and how this metamorphosed into an entire worldview geared to legalization¹ and “normalization” (1) of illicit drug use. Proponents of this worldview or ideology have sought to dismiss and discredit those who disagree with them. This interdependency and alliance of harm reduction and legalization will simply be called harm reduction/legalization. Factors in this activism within Canada will be touched upon, including problems created by unchecked mingling of activism with positions of academic, research, professional and public authority, and the politicisation of national drug policy. It will be pointed out that these legalization maneuvers are contrary to and misrepresent both the realities of substance abuse and the sentiments of Canadians. The immediate implications of activism mingled with drug policy will be described within the Canadian context. The hope is to attempt to balance the current debate over drug policy internationally and offer a wakeup call to individuals, organizations, and governments that recognize the reality of drug use.

Scope of the Problem

For anyone who has seen up front the effects of drugs on individuals, families, communities, and nations, the singular task of drug policy and programs is to reduce the pain, suffering, and human and financial loss created by substance abuse. This is the common ground for all who work and care about substance abuse and addictions. Canada, like most nations, has a considerable problem with substance abuse. As of 2007, Canadian youth led the world in cannabis consumption (2) and Canada is a major producer and exporter of cannabis. (3) The use of tobacco and alcohol continue to be significant, although tobacco use has declined in Canada over the past two decades. (4) Binge drinking and heavy drinking per occasion increased among Canadian youth while illicit drug use decreased. (5) (6) The portion of the population 15 and over reporting use of any illicit drugs in the past year remains low (10% for cannabis; less than 2% for other illicit substances). Past year cannabis use among Canadian

¹ Legalization as discussed in this paper includes forms of de facto legalization such as “decriminalization.”

youth 15-24 years old has continued to decline, from 37% in 2004 to 25% in 2010. (7) The estimated cost of substance abuse annually in Canada was 39.8 billion dollars annually as of 2002. (8) Not surprisingly, the majority of this cost was produced by the use of the legal substances tobacco (\$17B) and alcohol (14.6B). The estimated cost to Canada of illicit drug abuse was \$8.2B or **20.6%** of the total cost of substance abuse. The two largest factors in the human/economic costs of substance abuse were, in order, lost productivity and health costs. Illicit drug use produced, per capita, more lost productivity than either tobacco or alcohol because of the greater use of these substances among younger population groups. Law enforcement accounted for 13.6% of the total economic cost of substance abuse. Of course, many costs simply cannot be valued, such as lost opportunities, emotional pain and loss in families, and deflected developmental trajectories in youth (e.g., dropping out of school or poor school performance), and intergenerational effects.

Canadian Attitudes toward Substances and Substance Abuse

In the latest accessible attitude survey (2004) of Canadians aged 15 and over, 90% (72% for youth age 15-17) perceived regular cannabis use to be a great or moderate risk. Eighty percent (80%) of Canadians reported believing that treatment and prevention were the most important drug policy priorities, and 80% reported wanting “massive increases” in drug related law enforcement. (9). A majority of those surveyed expressed agreement with taking legal action against drug users and especially against those who sell drugs (77% and 95% respectively). As of 2004, 78% of the public had never heard of harm reduction, even when defined for them. When asked to choose between treatment and prevention, and incarceration as priority approaches, respondents heavily favoured treatment and prevention (78%). However, a majority reported supporting needle exchange programs (75%) and drug courts (79%).

These statistics provide some social context for discussing activism as it relates to liberalization of drug policy in Canada over the past 10 years in particular. Because substance abuse affects entire families and communities, the beliefs and perceptions of community members are considered important in this paper. And no groundswell of support for liberalizing drug policy and normalizing drug use is evident in the expressed sentiments of this national sample of Canadians. While public opinion should never be the sole basis, public policy does need to reflect and support the positive collective values of the people.

Canadian Drug Policy Prior to 1998

Canada has long been a leader in health promotion. The 1984 Ottawa Charter for Health Promotion (10) expanded the view of health from a traditional individualist view toward a comprehensive one: encompassing informal and formal support systems; and social, emotional, physical, and economic climates. This Charter led the way to numerous national and provincial programs and policy initiatives and has had an international influence on the way public and private organizations and institutions envision health. Canada’s first formal National Drug Strategy, initiated in 1987, incorporated principles of health promotion in its demand reduction funding, which was split between supply and demand side strategies. Numerous community mobilization efforts sprouted during the five year duration of the Strategy. In 1992 the National Drug Strategy was renewed, with funds again split between demand and supply reduction.

In the 1998 renewal of the National Drug Strategy, harm reduction was first introduced as one of four policy pillars that also included prevention, treatment, and enforcement. Funding was reduced, however, and the impact of this strategy was limited. Within this strategy, harm reduction clearly was intended as a companion policy, and the earlier national discussions made this clear. (11) Forms of harm reduction were already established in such initiatives as drinking driving programs, needle exchange, and methadone programs. In Canada, there was and continues to be a recognition in the field that for people not ready for abstinence based treatment, there needs to be lower threshold programs; these types of programs, if effective and closely partnered with treatment, may address immediate needs while providing a bridge to recovery. Brief interventions and similar approaches have been incorporated readily for use with people at risk in their substance use without requiring abstinence. These programs, developed originally for alcohol abuse, work with non-addicted individuals toward an immediate goal of reducing and modifying consumption and have been based largely on the work of G. Alan Marlatt (12) and others.

Metamorphosis of Harm Reduction from Partner Strategy to Ideology

For this paper the term *activist* will be used consistent with the Wikipedia definition as being “*Intentional efforts to bring about [social](#), [political](#), [economic](#), or [environmental](#) change.*” In discussing activism to change Canadian drug policies, it is not the intention to criticize activism itself. Activism within the bounds of reason is a natural part of democratic processes. It is the *mingling of activism with positions of public and professional responsibility, often without acknowledging membership or activity as an activist* that constitutes the central concern of the discussion. This mingling lends authority of position and/or title to the activism and provides a bully pulpit for activists in positions responsible for policy, programs, and/or research. It also raises valid questions of potential bias existing where there should be no bias, as in the case of researching and evaluating programs. The influence of this “titled activism” is enhanced by the simple fact that as large as Canada is geographically, with a population 1/10 that of its neighbour the United States, it is actually a “small pond”, wherein relatively few individuals, well positioned, can wield disproportionate influence. Such is the case with harm reduction/legalization activism in Canada. There are many examples of this, but the purpose of this paper is not to be a “tell all,” or to criticize individuals, most of whom are obviously competent and passionate in what they do. Where examples are used, it is the principles and methods of pushing for harm reduction/legalization that are challenged, not the individuals.

The term *ideology* will also be used to describe the world view, values or philosophical basis for advocating for harm reduction/legalization. Whatever approach is taken toward societal drug use, it will ultimately be based, in part, on an ideology. A world view, value set, or philosophy underlies current policies, and any other policy option. This is important to make clear because much has been made in Canada and elsewhere about current approaches to drug policy being “ideological”, while harm reduction/legalization is purported to be science-based. This has been done both by titled (13) and lay (14) activists. The fact is, an ideology or ideologies underpins any policy approach.

The generally accepted definition of harm reduction is “*any program or policy designed to reduce drug-related harm without requiring the cessation of drug use.*” (15) As mentioned, this was the understood intent for many people. However, since 2000 in particular, harm reduction has increasingly become enmeshed with the worldview that drug use is normal and inevitable, should be legalized, and the central focus of policy should be on reducing the

harms of use while focussing on the human rights of users. The emergence of this view can be summated by quotes from a briefing paper to Parliament prepared by an analyst for the 2000/2001 Senate Special Committee on Drugs (16):

“Prohibition, legalization, medicalization and harm reduction are four common approaches to the use and abuse of psychoactive substances. These models differ in how they perceive such use and abuse, and in what they believe are the characteristics of users and the consequences of substance use and abuse. As well, the four models have different views on how society should react to the health, social and economic consequences of substance use and abuse.”

“Supporters of prohibition generally associate the use of a psychoactive substance with morally corrupt behaviour that can be modified, and argue that control is best achieved by legal sanctions. Proponents of legalization believe, among other things, that more problems are actually caused by the criminalization of substance use and its users, and that criminal penalties for illicit substance use should be removed. On the other hand, under the medicalization approach, the person who abuses psychoactive substances is perceived to be ill and in need of medical attention and control. Finally, harm reduction, which gained popularity during the 1980s when the spread of HIV/AIDS came to be viewed as a greater threat to individuals and public health than substance use, adopts a value-neutral view of the use and users of psychoactive substances, one that does not see these as intrinsically immoral, criminal or medically deviant.”

“Harm reduction adopts a value-neutral view of drug use and users, accepting the fact that some users cannot or will not stop using psychoactive substances.”

“Harm reduction strategies can also be based on legalization, where the manufacture, sale or possession of substances is authorized, with perhaps some regulations relating to their sale, advertisement, or place of consumption. Other strategies incorporate decriminalization, either implicit, where certain actions such as possession of opioids at a supervised injection site are allowed, or explicit, where criminal penalties for the consumption and possession of an illicit substance are reduced or eliminated.” (17)

This brief contains numerous errors and flaws in reasoning. For example, few people in society, much less in the addictions field, believe drug users are morally deficient. This is a manufactured term. Second, the assumption is made – and has been made in other places – that it is possible to be values neutral. This is, of course, an oxymoron. Any position on the issue of drugs itself expresses a value. Arguably, in an issue such as drug abuse, it is not possible to be entirely neutral, and the pretence of neutrality should be replaced with frank admission of the values, experiences, wisdom, that lead to one view or another. However, the main point in this quote is that it exemplifies thinking wherein legalization and harm reduction are mutually exclusive from “prohibition” (into which presumably current views of treatment, incidence reducing prevention, and supply reduction are lumped) and in which harm reduction/legalization becomes the overarching philosophy of drug policy.

The Senate Special Committee on Illegal Drugs (16) was led by a staunch advocate of legalization and heard a majority of testimony from proponents of legalization. The background paper for the Committee (18) was prepared by a founding member of the Canadian Foundation for Drug Policy and the International Harm Reduction Association, both groups that advocate harm reduction /legalization. From its opening paragraph it attacks drug laws and calls for legalization; and it contains 50 references extolling harm reduction

ideology. Not surprisingly, the report of this Committee called for full legalization of cannabis.

A second influential Canadian work advocating the harm reduction/legalization alliance of ideology reveals the intent of harm reduction to be introduced in phases so as to gain cooperation and effect gradual change: ultimately achieving the end of wholesale change in drug policy. The following is a quote from *Harm Reduction: a New Direction for Policies and Programs*, perhaps the most authoritative pro-harm reduction work in Canada. Its editorial group included founding members of the pro-legalization advocacy group, the Canadian Foundation for Drug Policy:

“Although harm reduction is at odds with the dominant legal-sanction-based policy, the middle range and pragmatic nature of harm reduction measures makes it possible for certain harm reduction strategies to be tolerated, accepted, or even incorporated by legal authorities, without completely dismantling the counter-productive punitive policy. The support and cooperation of the police in needle-exchange programs for injection drug users is one of several examples of the diffusion of genuine harm reduction elements into the existing drug policy, enabling change to occur, and thereby bringing about gradual policy reforms.”
(19)(p. 9-10)

The intentions of harm reduction, as it has come to commonly refer to, clearly include full “drug policy reform,” the common euphemism for legalization used by its proponents. It is the same view expressed in Australia by Alex Wodak, President of the Australian Drug Law Reform Society (20) at a 2004 conference of the International Harm Reduction Association: *“In some parts of the world, a second phase (of harm reduction) has commenced recognising the need to reform drug laws which are inherently (and inadvertently) harm augmenting.”*
(21)

The National Framework for Action to Reduce the Harms Associated with Alcohol and Other Drugs and Substances in Canada (22) provides another example of the effect of harm reduction ideology on drug policy in Canada. For the first time in national dialogue, the term *problematic drug use* is used in all references and as the target of drug policy. Though just a term, it represents a fundamental shift in the basic view advocated toward drug policy. For example, the term implies that there is a clear distinction between problematic and non-problematic drug use that can be reliably identified. The term and its meaning carry implications for primary – incidence reducing – prevention aimed at preventing initial use of drugs, and for treatment and law enforcement, since it implies some safe level of illicit drug use. It is a confusing term and more represents the mindset of the authors than it does reality. By the change of a simple term, whatever non-problematic drug use constitutes becomes unilaterally accepted as normal and arguably acceptable behaviour.

INSITE: Activism Mingled With Research

INSITE refers to the supervised injection facility in Vancouver’s Downtown Eastside (DTES), an area defined by high drug use, crime, public disorder, and homelessness. About 5% of the drug injections in the DTES are done at INSITE. (23) INSITE was established ostensibly as a pilot project. The Conservative government challenged INSITE based on concerns such that it was displacing funds needed for treatment and was not solving the core problem of addiction. (24) On September 30, 2011 The Supreme Court of Canada rejected the government’s appeal of an earlier provincial ruling and the facility continues to have an

exemption from federal drug laws. (25) (26) The government is reviewing its options and has stated that it stands by its view that treatment and prevention are its priorities, not harm reduction. Prime Minister Stephen Harper has said:

“The preference of this government in dealing with drug crime is obviously to prosecute those who sell drugs and create drug addiction in our population and in our youth. And when it comes to treating drug addiction, to try and do so through programs of prevention and treatment, rather than through the issues that were in front of this court in terms of so-called harm reduction.” (26)

This paper will not discuss INSITE except as a classic example of mingling activism with the authority and practice of research. Member(s) of the INSITE research team, responsible for the evaluations to determine if it was effective, actually wrote the successful proposal to create INSITE with a harm reduction action group in Vancouver (27); wrote pro-harm reduction/legalization pieces calling for programs like INSITE before the facility existed (28) (29) (30); continue to participate actively in pro harm reduction/legalization organizations, even winning awards for their work in “drug policy reform” (31) (32) (33) (34) ; were key in writing the Vienna Declaration²(35) and continue to market the Vienna Declaration. (36) (37) They also continue to disparage existing approaches to drug policy. (38) (32)

One of the concerns raised in critiques of the INSITE evaluations was the potential for bias. (39) (40) (23) Bias in research is not a criticism of ability or character, but a predisposition that can be conscious or unconscious, and not intentional. Bias can occur at any point in research, from funding to selection to interpretation of results. The ability of the researchers was never questioned and is not now questioned. However, the above noted actions of the research group before, during, and after the evaluations were conducted, justify concern: A fundamental tenet of evaluating program effectiveness is that the evaluators must not have a personal or professional stake or bias in the program to be evaluated. This would be doubly true in a controversial area where millions of dollars and the future directions of a nation may be at stake. Some would argue that peer review should pick this out. However, anyone familiar with the peer review process knows that it lacks the specificity to do this. In the case of INSITE, it could be argued that even the peer reviewers be reviewed, because they could well be colleagues and in agreement with any pre-existing biases, if they exist. Canada is indeed a small pond.

Activism within bounds of reason is an acceptable practice. Evaluative research is of course a good and important practice. But, the two comingled justify great concern, given what is at stake. What is done may be done. But, if ever there is an example of activism done using the mantle of professional authority, the case of INSITE qualifies. This is exacerbated by the fact that the evaluators of INSITE continue to attack their critics, including the federal government, claiming they have used ideology rather than science. At the same time, they fail to acknowledge the possibility that their own ideology is involved, while the tone of much of their discussion drips of ideological bias. (41) (42) If one is going to lay claim to the power of science, then that science must be pure and open to the closest scrutiny. Combining the

² The Vienna Declaration was prepared with significant participation by Canadian activists through the Vancouver-based International Centre for Science in Drug Policy (ICS DP) and other organizations, and is essentially a call to end to what is termed “prohibition” and to enact legalization and regulation of substances. It continues to be marketed through the ICS DP.

supposedly objective authority of science and titles of authority therein with ideological activism is dangerously powerful, and arguably inappropriate.

Implications of Harm Reduction/Legalization Activism

The activism as discussed in this paper has a number of serious implications for drug policy, present and future.

First, it should be pointed out that one of the attributes of harm reduction/legalization activism is its constant claim of objectivity and superiority over a “failed” system, while claiming anyone who disagrees is ideological. The Vienna Declaration, as marketed by the Vancouver-based Centre for Science in Drug Policy, has adopted as a mantra “drug policy should be based on evidence not ideology.” (32) This mantra has been picked up and repeated by pro-legalization groups. (43) (44) In fact, nowhere has it been established that to follow science and reason is necessarily to agree with and follow the path of harm reduction/legalization. Science does not take sides. Science is a tool, only as good as those who use it. It is highly doubtful that in a short time, with one program, that scientific evidence can be “overwhelming.” Those familiar with and who honour science know that science is a humble process, slow, step by step, seldom if ever producing massive and sudden certainty. It is easily abused.

The mantra, and its implicit claim to scientific truth, also ignores the fact that science supports strongly the value of current approaches to drug policy. For one thing, the law has been a clear deterrent to use, given the large difference in incidence and prevalence between legal and illegal substances, and the large difference in costs to society between illegal and legal drugs.³ Also, it is mistaken to accept success only as a *reduction* in problems over time. It is altogether possible that the current system, however imperfect, has kept the problem from becoming much larger, more quickly, than it might otherwise become. The point is the constantly parroted phrase that “the war on drugs has failed” is not substantiated, even if it’s clever in its connotation (The term for years now has been used exclusively by advocates of harm reduction /legalization). No evidence has been demonstrated by harm reduction/legalization advocates that legalization will reduce crime, and this is the key argument for legalization. Even if the government could become such an adroit drug dealer that users could have ready access to whatever substance in whatever potency their hearts desired, at a low enough price to afford with little or no income, the valid question remains – what would those who now traffic drugs then do? Every argument can be made that they would just shift to something more inhuman and do it in equally inhumane ways. A second implication lies in the mismatch between the views of harm reduction/legalization activists and the large part of the rest of society. This paper started out with reviewing public use levels and attitudes, and these are not levels of use or attitudes warranting wholesale policy reform. Harm reduction/legalization activism does not fit with the reality – that most people want no part of drug use. It certainly disregards parents, who bear the prime responsibility for raising healthy, capable, industrious and caring children. It would have government work against the interests of parents, and in fact all who care about healthy youth.

³ As the paper notes earlier, use of illegal drugs in Canada is a small fraction of that of legal drugs, denoting the effectiveness of laws as a deterrent. Likewise, the cost of illegal drug use is but a fraction of that produced by the use of legal drugs.

Harm reduction/legalization does nothing to help families succeed, and successful families are essential to civilization.

Third, harm reduction/legalization activism devalues abstinence based treatment and incidence reducing prevention, emphasizing instead programs that facilitate “safer” drug use. This forces a confrontation of values and closes down cooperation and communication, in effect politicising drug policy.

Perhaps the single most perilous implication of harm reduction/legalization activism lies in the nature and power of the titled activism that has been discussed. Activism in positions of power and authority – professional, academic, or public – has the power to co-opt institutional positions, thus cutting off public disagreement by employees of those institutions or those depending on cooperation or funding from those institutions. It is self-selective, seeking out its own till there is strict homogeneity of views. In the civil service and public institutions, the activism can effectively override the collective desires and needs of the public, becoming in effect a tyranny of the few over the many.

There is a collision of world views in drug policy today, not just in Canada but in many countries. It is but one front in a greater collision of ideals and values. Much can be improved in the way we deal with drugs. But, it is not a dichotomy, and certainly not a choice to leave with activists. Ultimately, if democracies remain, people will determine how collectively to deal with drugs. If they do not, it may be determined by activists, and that will be everyone’s loss.

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References:

1. *Normalization and harm reduction: Research avenues and policy agendas*. **Erickson, P.G. and Hathaway, AD.** 2, 2010, International Journal of Drug Policy, Vol. 21, pp. 137-139.
2. **UN Office on Drugs and Crime.** World drug Preort. *UN Office on Drugs and Crime*. [Online] 2007. <http://www.unodc.org/unodc/en/data-and-analysis/WDR-2007.html>.
3. **M, Glinny.** Canada: The new global drug lord. *Macleans Magazine*. [Online] August 18, 2009. <http://www2.macleans.ca/2009/08/18/canada-the-new-global-drug-lord/>.
4. **Health Canada.** *Canadian Tobacco Use Monitoring Survey (CTUMS)*. Ottawa : Health Canada, 2010.
5. **Canadian Centre on Substance Abuse.** *Canadian Centre oPrevalence of Youth Substance Use in Canada: Preliminary Report*. Ottawa. Ottawa : Canadian Centre on Substance Abuse, 2008.
6. **Degano C, Fortin, R, Remp, B.** Alcohol and Youth Trends: Implications for Public Health. *APOLNET*. [Online] 2007. http://www.apolnet.ca/resources/pubs/rpt_AlcoholYouth-5Nov07.pdf.
7. **Health Canada.** Canadian Alcohol and Drug Use Monitoring Survey: Summary of Results 2010. *Health Canada*. [Online] 2010. http://www.hc-sc.gc.ca/hc-ps/drugs-droguess/stat/_2009/summary-sommaire-eng.php.

8. **Rehm, J. et. al.** The Costs of Substance Abuse in Canada 2002: Highlights. *Canadian Centre on Substance Abuse*. [Online] 2006. <http://www.ccsa.ca/2006%20CCSA%20Documents/ccsa-011332-2006.pdf>.
9. **Health Canada.** Canadian Addiction Survey (CAS): Chapter 7: Public Opinion on Illicit Drugs. *Health Canada*. [Online] 2006. http://www.hc-sc.gc.ca/hc-ps/pubs/adp-apd/cas_opinions-etc/chap7_page2-eng.php#can_percep_prog.
10. *Ottawa Charter for Health Promotion*. **World Health Organization, Health and Welfare Canada, Canadian Public Health Association**. Ottawa : World Health Organization, 1986. Ottawa Charter for Health Promotion: an International Conference on Health Promotion - The Move toward a New Public Health.
11. *Harm reduction: Concepts and practice. A policy discussion paper*. **Riley D., Sawka E., Conley P., Hewitt D., Mitic W., Poulin C., Room R., Single E., Topp J.** 1999, Substance Use and Misuse, Vol. 34, pp. 9-24.
12. **Wikipedia.** G. Alan Marlatt. *Wikipedia*. [Online] 2011. http://en.wikipedia.org/wiki/G._Alan_Marlatt.
13. *Analysis and Comment: Science and ideology*. **Wang, S.** 2, 2007, Open Medicine, Vol. 1.
14. **Clow, Ethan.** When Policy Trumps Science: The Story of Insite. *Skeptic North*. [Online] May 2011.
15. **Centre for Addiction and Mental Health.** Harm Reduction: Its Meaning and Application for Substance Use Issues Position Statement. *Centre for Addiction and Mental Health*. [Online] http://camh.net/Public_policy/Public_policy_papers/harmreductionposition.html.
16. **SENATE SPECIAL COMMITTEE ON ILLEGAL DRUGS . FINAL REPORT: CANNABIS: OUR POSITION FOR A CANADIAN PUBLIC POLICY.** Ottawa : Parliament of Canada, 2002.
17. **Collin, C.** Substance Abuse Issues and Public Policy in Canada. *Parliament of Canada*. [Online] 2006. [Cited: December 7, 2011.] <http://www.parl.gc.ca/content/lop/researchpublications/prb0615-e.html>.
18. **Riley, D.** Drugs and Drug Policy in Canada. *Parliament of Canada: A brief review and Commentary*. [Online] 1998. <http://www.parl.gc.ca/Content/SEN/Committee/362/ille/rep/rep-nov98-e.htm>.
19. **Erickson PG, Riley DM, Cheng YW, O'Hare PA.** *Harm Reduction: A New Direction for Drug Policies and Programs*. Toronto : University of Toronto Press, 1997.
20. Home page. *Australian Drug Law Reform Foundation*. [Online] 2010. <http://adlrf.org.au/>.
21. *The Past, Present And Future Of Harm Reduction: Decades Of Misunderstanding*. **Wodak, A.** Melbourne : International Harm Reduction Association, 2004. 15th International Conference on the Reduction of Drug Related Harm.
22. National Framework for Action to Reduce the Harms Associated with Alcohol and Other Drugs and Substances in Canada. *National Framework for Action to Reduce the Harms Associated with Alcohol and Other Drugs and Substances in Canada*. [Online] 2005. http://www.nationalframework-cadrenational.ca/detail_e.php?id_top=1.

23. **Expert Advisory Committee on Supervised Injection Site Research.** *Vancouver's INSITE Service and Other Supervised Injection Sites: What Has Been Learned From Research? Final Report of the Expert Advisory Committee on Supervised Injection Site Research.* Minister of Health, Government of Canada. 2008.
24. **Staff.** CMA'S Support for Injection Sites Slammed. *Vancouver Sun*. May 26, 2011.
25. **CTV News.** Feds Vow to Review Court's Safe-Injection Site Ruling. *CTV News*. [Online] September 30, 2011. <http://www.ctv.ca/CTVNews/TopStories/20110930/supreme-court-insite-safe-injection-site-110930/>.
26. **Wherry, A.** The Insite Ruling. *Maclean's Magazine*. [Online] September 30, 2011. [Cited: December 8, 2011.] <http://www2.macleans.ca/2011/09/30/the-insite-ruling/>.
27. **Kerr, T.** *Safe Injection Facilities: Proposal for a Vancouver Pilot Project.* Vancouver : Harm Reduction Action Society, 2000.
28. *Drug Policy in Canada – The Way Forward.* **O'Briain, W., Kerr, T.** 1, 2002, Canadian HIV/AIDS Policy & Law Review 2002; 7(1): 1, 27-32, Vol. 7, pp. 27-32.
29. *Impact of supply-side policies for control of illicit drugs in the face of the AIDS and overdose epidemics: investigation of a massive heroin seizure.* **Wood, E. et al.** 2, 2003, Canadian Medical Association Journal, Vol. 168, pp. 165-169.
30. *Safe injection facilities in Canada: Is it time?* **Kerr, T., & Palepu, A.** 4, 2001, Canadian Medical Association Journal, Vol. 165, pp. 436-437.
31. **International Centre for Science in Drug Policy.** Scientific Board Members. *International Centre for Science in Drug policy*. [Online] 2011. http://icsdp.org/network/scientific_board.aspx.
32. —. Science In Drug Policy's Channel: The Drug War: A War on Public Health? *YouTube*. [Online] 2011. <http://www.youtube.com/user/ScienceInDrugPolicy>.
33. Achievement Awards. *REFORM: International Drug Policy Reform Conference*. [Online] October 26, 2007. <http://www.reformconference.org/achievement-awards>.
34. Science in Drug Policy. *World News*. [Online] 2011. http://wn.com/Science_In_Drug_Policy.
35. Vienna Declaration Writing Committee. *The Vienna Declaration*. [Online] 2011. <http://www.viennadeclaration.com/writing-committee/>.
36. **Kasubaska, Marta.** Interview with Evan Wood: The Vienna Declaration: From Signatures to Action. *Open Society Foundation*. [Online] Open Society Foundation, September 24, 2010. [Cited: December 5, 2011.] <http://blog.soros.org/2010/09/the-vienna-declaration-from-signatures-to-action/>.
37. *The Vienna Declaration: The Role of Online Engagement in Building International Consensus in Support of Drug Policy Reform.* **Montaner, M., Tapp C., Werb, D., Wood, E.** Istanbul : International Association for Media and Communication Research, 2011. IAMCR Conference on Social Media.

38. *The war on drugs: a devastating public-policy disaster*. **Wood E, Werb D, Marshall BD, Montaner JS, Kerr T**. 2009 Mar 21;373(9668):989-90, Lancet, Vol. 373, pp. 989-990.
39. *A Critical Evaluation of the Effects of Safe Injection Facilities*. **Davies, G.** 1, 2008, Journal of Global Drug | Policy and Practice, Vol. 3.
40. *A Critique of Canada's INSITE Injection Site and its Parent Philosophy: Implications and Recommendations for Policy Planning*. **Mangham, C.R.** 2, 2008, Journal of Global Drug Policy and Practice, Vol. 1.
41. **Kerr, T and Wood, E.** The Science and Politics of Evaluating Vancouver's Supervised Injection Site. *Harm Reduction International*. [Online] 2008.
http://www.ihra.net/files/2010/05/03/2008_Monday_Major_Evidence_Kerr.pdf.
42. **Wood, E., Werb, D.** Addressing Barriers to the Incorporation of Scientific Evidence into Drug Policy. *International Harm Reduction Association*. [Online] 2010.
<http://www.ihra.net/files/2010/09/02/172.pdf>.
43. **Vandermeer, J.** Drug Laws Should be Based on science not Ideology. *Cannabis Culture Magazine*. [Online] August 2010. <http://www.cannabisculture.com/v2/node/24464>.
44. **The Beckley Foundation.** The Vienna Declaration: Leading the Way to policies Based on Evidence not Ideology. *The Beckley Foundation*. [Online] 2010.
<http://www.beckleyfoundation.org/2011/03/01/the-vienna-declaration-leading-the-way-to-illicit-drug-policies-based-on-evidence-not-ideology/>.

The Four Pillar Drug Policy in Switzerland – 20 years after

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In the 1980s, Switzerland had a drug policy consisting of three pillars: Prevention, Therapy, and Law Enforcement. At that time, as the number of heroin addicts increased to tens of thousands, the authorities in several cities tolerated so-called “Needle Parks”. An open drug scene was established where thousands of addicts injected heroin in public, slept in parks, dealt in all drugs, and lived in slum-like misery, most of them in poor health. Several overdosed every day. The media published hundreds of reports on this scandalous situation and, eventually, the police were forced to close the parks and send addicts back to their own region.

In order to cope with the increasing number of heroin addicts, methadone programs were expanded. More than 17,000 heroin addicts were included in those programs which previously were very strict. Concomitant heroin or cocaine use was sanctioned by exclusion. Thenceforwards addicts received unusual high dose of daily methadone. Positive urine tests of heroin and cocaine had no consequence; nobody was excluded because of breaking the rules. Injection rooms were installed. Most of them still exist and they recently celebrated their 20th anniversary. During this time period, the concept of harm reduction was created. Drug liberalizers proposed to add it to the national drug policy as a fourth pillar. In this context, drug use was seen as a lifestyle - a human right. Harm reduction meant providing substitution programs for the majority of heroin addicts, which included the distribution of methadone as well as heroin. To introduce heroin distribution, a so-called trial was established. Although it failed to help addicts stop drug use, the maintenance of 70% of the addicts on these programs was celebrated as a success. As a result, the health authorities set up these so-called heroin-assisted treatment programs in several cities.

These events were accompanied by thousands of articles in newspapers to promote drug liberalization. Each article started with the sentence: “The drug war has failed”. “Law enforcement criminalizes sick people.” Pictures of people injecting heroin, needles and syringes, or joints were part of the message to habituate the public on drug paraphernalia. The continuous media campaign had a big impact on prevention and therapy.

Prevention

As a consequence, drug use skyrocketed. The consumption of marihuana, ecstasy, heroin, and cocaine was seen as a recreational activity. The Green Party, which started a referendum to legalize marihuana, claimed drug use as a human right.

The media praised the positive effects of the high evoked by drug use, while deriding those who warned of its dangerous effects on body and mind. These people were described as hard-liners, sectarian, or extreme right, by the media

All jobs in the field of drug prevention and counseling, among health authorities and social workers, were occupied by advocates of the drug liberalization movement. They became the experts in all drug issues and other opinions were excluded. Eventually, information about the harmful effects of drug use was no longer distributed.

The prevailing opinion among members of the younger generation was that it was only a matter of time before marihuana and other drugs were legalized. Fortunately, the voters rejected any form of legalization of marihuana in two referendums, the last in 2008.

The drug problem is no longer publicly discussed and has vanished from the political agenda. In some sense, the establishment of heroin distribution has had a positive effect on drug prevention. Heroin is no longer attractive, but is now seen as a “loser drug”; therefore, very few young people ever start using heroin.

Unfortunately, the young generation is not so worried about recreational use of cocaine, ecstasy, and marihuana. At weekend parties, all these drugs are excessively used. During these parties, drug counselors limit their intervention on organizing laboratories testing the purity of illegal substances.

Drug prevention, which means informing people to avoid drug use because of the harmful effects, no longer exists. The health authorities prefer to emphasize the dangers of eating disorders, smoking, gambling, and other addictions. Despite this situation, the perception of marihuana has changed, and more people now realize the negative consequences of drug use.

Drug use in Switzerland is an interesting and evolving situation. Unfortunately, no continuous monitoring exists, therefore casual studies, such as the following, provide insight into what is happening.

Cannabis Monitoring in 2008

The study shows the changes in Marihuana use, comparing 2004 and 2007. The diagram relates to young people between 13 and 29 years of age. The lifetime prevalence went down from 46.1% in 2004 to 43.5% in 2007 (total of former and present users of Marihuana). In 2007, 11.2% used Marihuana in the six months before questioning. In 2004, the figure was 13.3%.

| | Women | | Men | | Total | |
|-------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 2004 % | 2007 % | 2004 % | 2007 % | 2004 % | 2007 % |
| no use | 60.3 | 61.9 | 47.7 | 51.3 | 53.9 | 56.5 |
| former use | 31.1 | 31.2 | 34.5 | 33.5 | 32.8 | 32.3 |
| present use | 8.6 | 6.9 | 17.8 | 15.3 | 13.3 | 11.2 |

Source: Arbeitsgruppe Cannabismonitoring (Annaheim B. et al.)(2008) Veränderungen im Cannabiskonsum 2004 bis 2007. Edited by Bundesamt für Gesundheit (BAG)

The rate of marihuana use remains at a high level and does not appear to be going down significantly. However, it seems to have lost a little of its attraction.

Therapy

Drug addiction must be seen as a severe chronic disease, which eventually results in premature death. The most effective solution for addicts, to avoid this outcome, is to terminate the use of the toxic substance. This way out of drug use is very difficult to achieve. Very often addicts will experience several cycles of withdrawal, rehabilitation, and relapse, before they are finally physically and mentally weaned off the drug.

This idea of abstinence-oriented treatment has been clouded by the conception of harm reduction. Drug addiction is seen as similar to diabetes; people with diabetes need insulin, and addicts need heroin. So the logical solution is to distribute heroin to those who need it. In this climate, facilities which offer abstinence-oriented treatment are rare. They have difficulties being acknowledged and financed by health authorities. Many of them have had to close because of lack of money, and their clients are being redirected to substitution treatment. Most of the rehabilitation programs offer “partial withdrawal” (cocaine or heroin withdrawal, but not methadone) and substitution of methadone.

Harm reduction

Together with injection rooms, needle and syringe exchange, the drug policy is primarily based on methadone, buprenorphine (Suboxon) and heroin distribution. The following, from the summary of the annual report “Heroin assisted treatment 2007” (HAT), edited in 2008 by the Federal Health Authorities, gives a good picture of the present situation.

Heroin assisted treatment 2007

(in alphabetical order)

Age: The mean age of the patients was 40 years, and the median was 39. The ages ranged from 19 to 70.

Centres: Heroin-assisted treatment is currently being offered in 23 institutions (including two centres in prisons) which have an interdisciplinary structure and hold special authorization from the Federal Office of Public Health.

Concomitant substance use: Especially with regard to alcohol, cocaine, cannabinoids and tobacco, it can be seen that patients who had been in treatment for a year or more consumed the relevant substance on fewer days and hence had less concomitant substance use than the newly enrolled patients.

Costs: One patient-day in a HAT centre cost on average 57 francs in 2007 with an overall benefit to the economy of 104 francs. Treating a heroin-dependent in a HAT centre therefore saves society 47 francs per day, mainly in the form of costs for criminal proceedings.

Delinquency: A study published in 2002/3 revealed that, according to statements by patients themselves, there is a dramatic short-term and long-term decrease in the delinquency rate (particularly serious theft and drug dealing - by more than -80%) and patients' victim experience. Similar figures emerge from analyses of criminal offences recorded by the police (downward trend of -65% after one year's treatment or longer and more than -80% after four years' therapy) and Criminal Records entries (downward trend of more than -80% after four years' treatment).

Discontinuations: 169 patients discontinued HAT in 2007 (not counting 7 discontinuations arising from a transfer to another HAT centre.) Discontinuation questionnaires recorded six deaths in 2007. 71% of the patients who left the programme changed to either abstinence-oriented treatment (16%) or to methadone substitution (55%).

64% of those who enrolled between January 1994 and March 1995 were available to answer questions as part of a six-year follow-up study: 111 had completed either methadone treatment or abstinence-oriented therapy since discontinuing HAT, and 16% said they had not consumed any illegal drugs in the last six months before the survey.

Dosage forms: About 2/3 of treatments were given in an injectable form, and 1/3 in an oral form.

Employment situation: With regard to the employment situation, 19.0% of the patients were active in the employment market and 20% were seeking employment when they enrolled in the treatment. By contrast, a year or more after the start of treatment, 33% of all the patients had a full-time or part-time job, 9% were seeking employment, 5 people were in training and 2 had been offered a job.

Enrolments: 130 patients newly enrolled in the HAT programme in 2007. The mean age of the enrolling patients was 38 years. 69.8% of the patients stated that they started HAT on their own initiative.

Gender: 76% of the persons treated were male, 24% female.

Heroin dependency in Switzerland: In 2002 the FOPH put the number of heroin-dependent people in Switzerland at between 18,500 and 25,500. The total number is estimated to be falling by 4% per year.

International: Studies from the Netherlands, Germany, Spain and the UK confirm the positive results from Switzerland. Other studies are ongoing in Canada and Belgium. Treatment with diacetylmorphine is thus one of the best evaluated treatments in the field of addiction, and both the scientific and clinical evidence can be regarded as proven.

Housing situation: Patients who had been in treatment for at least a year were more likely to lie in a stable housing situation (96%) and be living alone (58%) than newly enrolled patients (73% and 46% respectively).

Patient numbers: The number of patients was 1283 at the end of December and the maximum number of HAT places available 1444, which gives capacity utilization of 89%.

Physical stress: Among the people tested at enrolment, 75.5% had positive hepatitis C virus (HCV) test results, 39.7% positive hepatitis B (HBV) and 56.2% positive hepatitis A (HAV), the lowest prevalence being for HIV at 7%. Vaccination was planned for the majority of the HAV and HBV-susceptible patients.

Psychological stress: Compared with a representative survey of the general population using SCL-27, the HAT patients in Switzerland have higher average scores on all scales, which indicate a higher level of psychological stress in the HAT patients. The scores on the enrolment questionnaires in 2005-2007 are higher than those in the questionnaires to monitor progress in 2006-2007: a sign of diminishing psychological stress during the course of treatment. At enrolment another confirmed psychiatric disorders is diagnosed (apart from the addiction diagnosis) in 49% of the patients (suspected diagnoses not included because they cannot be confirmed until a later stage).

Retention rate: More than 70% of all the enrolled patients were still in HAT after one year and 60% after two years or longer. The period spent in heroin-assisted treatment which 50% of all the treated patients at least achieved (median retention rate) was three years.

Satisfaction: 91.1% of patients are generally very or largely satisfied with the treatment they have received in the HAT centres.

Staff: At the end of 2007 a total of 370 people with an average workload of 60% were employed in the 23 HAT centers operating 365 days a year.

Substitution treatments: In 2006 HAT accounted for 8% of the total of 16,388 substitution treatments carried out in Switzerland, while 87% of the substitution patients were maintained with methadone. The remaining treatments included buprenorphine, morphine and codeine.

HAT Annual Report 2007

More than 50% of addicts leave heroin distribution programs because they no longer want to attend a treatment center daily, as is required. However, if they are on a substitution program

such as methadone, they are given the dosage for a whole week, rather than daily. Because the effect of heroin vanishes after 3-5 hours, most of these heroin patients receive an additional, high dosage of methadone for the night and next morning, in order to avoid withdrawal.

The average age of addicts in substitution programs goes up yearly. Some of these addicts are in heroin distribution programs for more than fifteen years. Heroin addiction has changed to an illness of old men. Most of the addicts are in a poor state of health and get support for their daily needs. In 2010, in the city of Berne, the number of addicts who moved to a home for the elderly peaked at 5%. They were no longer able to live alone and take care of themselves, though most of them were only between 50-60 years of age. The staff in these institutions administers the daily dose of heroin.

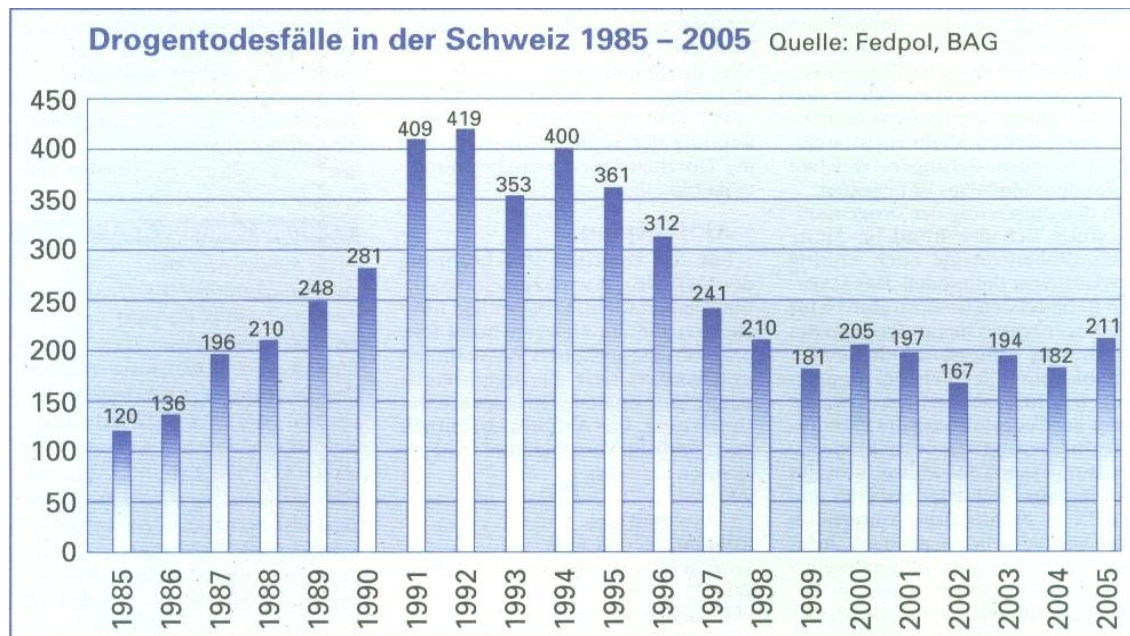
Heroin programs were conceived to support addicts until they were ready to stop consumption and live drug free. The reality is that these substitution programs are not working, as addicts are not ready or strong enough to go to drug free therapy even after years of substitution. Drug consumption has become a life style, until death. To be drug free is a long-term objective, never achieved by the majority of heroin addicts. They never get the chance to live drug free. They continue to be monitored by the health administration for life.

Drug death rate in Switzerland over the last 25 years

The decreasing number of deaths indicates that the Swiss drug policy is successful, in some sense. During the time of the Needle Parks, “Platzspitz” and “Letten”, the death rate was at a record high, but has fallen since. After the turn of the century, the number of overdose deaths, per year, has remained at approximately 200. Addicts dying of other harmful consequences of long-term drug use are not included in these statistics.

To have an idea what this high number means, it can be compared to the number of deaths that occur in road traffic accidents. In Switzerland that figure is approximately 450 per annum.

Drug death rate from 1985 – 2005:



Drogentodesfälle in der Schweiz 1985-2005, Fedpol (Federal Police statistics), BAG)

Between 2005 and 2010 the figure remained high. Astonishingly health authorities did not take measures to bring numbers down, as did the traffic control authorities.

Law enforcement

Twice, activists of the Green Party and drug liberalizing promoters collected signatures to start a referendum. In 1998 their proposal called for legalizing all drugs. The voters rejected it. Then in 2008 there was another proposal to legalize Marijuana only, and again it was rejected. Unfortunately, the voters agreed in 2009 to make heroin distribution legal. The perception was that it is an act of humanity to give addicts the “needed” medicine.

Every year the police confiscated high amounts of various drugs. Dozens of hemp shops were closed by the police. These shops sold hemp plants, seeds, pipes, hemp beer, hemp shampoo, soaps, T-shirts with images of hemp plants, and cushions filled with dried hemp plants, etc. Farmers were banned from the practice of feeding their cows food with hemp additives, because THC could pollute the milk. There was, and still is, a strong hemp lobby in Switzerland planting hemp. These plants were often confiscated by the police.

In order to stop the establishment of new drug scenes, the police must be strict and diligent. Parents are informed when their under-age children are caught smoking marijuana. There is now a proposal to change the law whereby a marijuana user would be fined by the police, rather than punished by a judge. Police departments are against this, but most political parties are not opposed to it.

In conclusion, after revision of all pillars of Swiss drug policy, the result is that drug use rates remain at a high level for marihuana, ecstasy, and cocaine. Nobody is warning of the harmful effects of these substances. Public perception is that these drugs are as good as legalized, and that law enforcement, as it relates to drugs, is useless and old fashioned.

On the other side, the majority of the population is strictly against drug liberalization. The promoters of legalization once intended to make Switzerland an outstanding model for legalization. They were successful in introducing so-called heroin assisted treatment. Fortunately, they failed in any further liberalization.

Heroin is no longer used by the young, as it is seen a loser drug, leading to sickness and death. This opinion may be the only prevention message of heroin distribution. The continued high death rate related to heroin addiction leads to the conclusion that harm reduction is not working. It is clear that a new, more effective drug policy has to be established.

Sources:

1. *Heroin assisted treatment 2007, published 2008, BAG*
2. *Source: Arbeitsgruppe Cannabismonitoring (Annaheim B. et al.)(2008)
Veränderungen im Cannabiskonsum 2004 bis 2007. Edited by Bundesamt für
Gesundheit (BAG)*
3. *Drogentodesfälle in der Schweiz 1985-2005, Fedpol (Federal Police statistics),
BAG)*

Prohibition's Real Lessons for Drug Policy

Kevin A. Sabet, Ph.D.

Prohibition – America's notoriously "failed social experiment" to rid the United States of alcohol – was on many people's minds this past month, as public television stations repeatedly broadcasted director Ken Burns' highly acclaimed series of the same name.

Immediately, it was seized upon by drug legalization advocates, who say it proves that drug prohibition should be abandoned. But a closer look at what resulted from alcohol prohibition and its relevance to today's anti-drug effort reveals a far more nuanced picture than the legalization lobby might like to admit.

First, it is important to get the facts right about alcohol prohibition, which lasted from 1920 to 1934. As ratified in the 18th Amendment, Prohibition banned the "manufacture, sale, or transportation of intoxicating liquors within, the importation thereof into, or the exportation thereof from the United States...." Many states – 36 of the 48 to be exact – had already banned liquor prior to the national constitutional amendment. As argued by Harvard's Mark Moore and other astute policy observers, alcohol prohibition had beneficial effects along with the negative ones. Alcohol use plummeted among the general population. At the beginning of the twentieth century, Americans drank 2.6 gallons of alcohol per person, per year. By 1919, this amount dropped to 1.96 gallons per person. In 1934, the first full year after repeal of national Prohibition, alcohol use stood at .97 gallons per person. From then on, consumption rose steadily to its present level, approximately tripling from the time immediately after Prohibition.¹ Furthermore, death rates from cirrhosis of the liver fell from 12 per 100,000 in 1916 to 5 per 100,000 in 1920, and remained at that level throughout Prohibition before rising sharply again after repeal. Among men such rates declined even more sharply – about 66% in all.²

Additionally, arrests for public drunkenness were cut in half. Yes, organized crime was emboldened, but the mob was already powerful before Prohibition, and this continued long after Prohibition ended. In fact, the homicide rate grew faster in the decade before Prohibition, according to a report by the National Academies of Science.

Despite these statistics, no one is suggesting that alcohol prohibition should be reinstated. Americans have concluded that the right to drink outweighs its public health and safety consequences. But it is important to remember that the policy was not the complete failure that most think it was, and so we should be wary of misapplying its lessons.

If our experience with Prohibition was a nuanced one, then it is surely a stretch to apply the so-called conventional wisdom associated with it to help us shape policies on other intoxicants today. Still, a favorite argument of legalization supporters is that since “we all know” alcohol prohibition failed, drug prohibition is destined to fail, too. Given modern America’s thirst for liquor, it is a clever political maneuver to link the two policies in this way. But notwithstanding one’s position on the success or failure of alcohol prohibition, there are key differences between that policy and modern day drug enforcement that render a comparison almost useless for serious policy analysis.

First, it should be remembered that, unlike illegal drugs today, alcohol was never really prohibited altogether. Laws forbade the sale and distribution of liquor, but personal use was not against the law. Second, alcohol prohibition was not enforced in the same way as today’s drug laws. Congress and the executive branch were uninterested in enforcing the law. Even many prohibitionists felt that the law was so effective, it did not need enforcement. Police, prosecutors, judges and juries, frequently refused to use the powers the law gave them. In 1927, only 18 of the 48 states even budgeted money for the enforcement of prohibition, and some states openly defied the law.

The key difference between alcohol and drug prohibition, however, lies in the substance itself. Alcohol – unlike illegal drugs – has a long history of widespread accepted use in our society, dating back to before Biblical times. Illegal drugs cannot claim such pervasive use by a majority of the planet’s population over such a long period of time. Of course cannabis *has been used* for thousands of years, and other mind altering substances have their place in *certain cultures during specific periods of time*, but no substance other than alcohol can claim such widespread approval, use, and influence.

So what lessons should policymakers learn from America’s experiment with alcohol prohibition to inform drug policies? One lesson learned is that when a substance is legal, powerful business interests have an incentive to encourage heavy use by keeping prices low. Heavier use, in turn, means heavier social costs. For example, alcohol is the cause of a million more arrests annually than are all illegal drugs combined. Indeed, alcohol use leads to \$180 billion in costs associated with health care, the criminal justice system, and lost productivity; alcohol taxes on the other hand – kept outrageously low by a powerful lobby – generate revenue amounting to less than a tenth of these costs.

Even so, legalization advocates try to capitalize on today’s global economic woes, and use the potential for new tax revenues as a key argument in favor of repealing drug laws. But as author Daniel Okrent, whose research into prohibition inspired Burns’ series, wrote last year: “The history of the intimate relationship between drinking and taxing suggests ... that ... [people] indulging a fantasy of income tax relief emerging from a cloud of legalized marijuana smoke should realize that it is likely only a pipe dream.”

If our experience with legal alcohol provides us with any lessons for drug policy, it is this: we have little reason to believe that the benefits of drug legalization would outweigh its costs.

But that doesn’t mean that we need to be severe and punitive in our drug enforcement either. People in recovery from alcohol and other drug addictions should be entitled to social benefits, including access to education, housing, and employment opportunities, despite their past drug use. We should think seriously about the rationale and effectiveness of imposing harsh mandatory minimum sentences for simple drug possession. And no one can credibly argue that we have enough treatment slots for everyone who needs them, or that we have an adequate supply of evidence-based drug prevention for every school kid, regardless of

economic background. Indeed, our current drug policy leaves something to be desired, and like most policies, it needs constant refinement.

Still, it is wrongheaded to think that the only choices we have in drug policy are a punitive approach centered exclusively on enforcement, and one based on careless legalization. Neither has ever worked particularly well.

Kevin A. Sabet, Ph.D., stepped down last September as Senior Policy Advisor to President Obama's Drug Czar. He currently is a consultant through <<http://www.kevinsabet.com/>> www.kevinsabet.com<<http://www.kevinsabet.com>> and a Fellow at the Center for Substance Abuse Solutions at the University of Pennsylvania. Follow him @kevinsabet.

About the Author

Working on drug policy issues for more than eighteen years, Kevin Abraham Sabet, served from 2009-2011 in the Obama Administration as the Senior Advisor to Director Kerlikowske at the White House Office of National Drug Control Policy (ONDCP). In this position, Dr. Sabet advised Director Kerlikowske on all matters affecting priorities, policies, and programs of the National Drug Control Strategy. He was one of three main writers of President Obama's first National Drug Control Strategy, and his portfolio included leading the office's efforts on marijuana policy, legalization issues, international demand reduction, drugged driving, and synthetic drug (e.g. "Spice" and "Bath Salts") policy. Dr. Sabet represented ONDCP in numerous meetings and conferences, and led the Administration's international drug legislative and diplomatic efforts at the United Nations. Representing his non-partisan commitment to drug policy, he previously worked on research, policy and speech writing at ONDCP in 2000 and from 2003-2004 in the Clinton and Bush Administrations, respectively. He remains the only staff member at ONDCP to hold a political appointment in both the Bush and Obama Administrations.

Through www.kevinsabet.com, Dr. Sabet is currently a consultant to numerous domestic and international organizations. As a Marshall Scholar, he received his Ph.D. and M.S. in Social Policy at Oxford University and B.A. in Political Science from the University of California, Berkeley.

Sources:

¹ Lender ME, Martin JK. Drinking in America. a history. New York: Macmillan, 1982.

² Aaron P, Musto D. Temperance and prohibition in America: a historical overview. In: Moore M, Gerstein D, eds. Alcohol and public policy: beyond the shadow of prohibition. Washington, DC: National Academy Press, 1981:127-181 and Goldstein A. Addiction: from biology to public policy. New York: WH Freeman, 1994.