Legalization of Cannabis in Canada: Implementation strategies and public health

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Summary of Recommendations

1. The Federal government should provide guidelines for the production and sale of cannabis that includes the specific objective of minimizing harms to users.
2. Cannabis should be sold in government-controlled stores and individuals should be allowed to grow specified quantities for personal use.
3. Standardized labelling on all cannabis products should include at least percent of THC, product weight, number of "standard doses" and percent of cannabidiol (CBD).
4. Regulations encourage the development and use of less harmful products. Cannabis products that may be attractive to children should be sold in tamper resistant containers.
5. Minimum prices are set per standard dose (based on THC content) and Canadian jurisdictions strive for a consistent approach to pricing of cannabis products.
6. Products derived from cannabis for medicinal purposes should be prescribed by doctors and dispensed by pharmacists.
7. Cannabis sales are subject to the same age restrictions as alcohol in each province.
8. A well-developed set of advertising regulations is needed with a public complaints mechanism.
9. Civil sanctions are created for cannabis impaired driving similar to the current BC alcohol impaired laws. Drivers should have a choice as to whether to provide a urine, saliva or blood sample while being advised that blood is the most accurate.
10. Investment is made in effective strategies to increase Canadians' health literacy related to drug use to equip them to make informed healthy choices about cannabis use.
11. A high percentage (10% or more) of revenue gains from the sale of cannabis products is directly diverted to health promotion, education, research and treatment.
12. Enforcement against violations of regulations related to cannabis should be treated similarly to current regulations related to tobacco and alcohol.

Background

The Federal government is committed to legalizing the sale and use of cannabis in Canada in spring 2017 (Smith, 2016). Cannabis is a popular drug and its criminalization has been costly and ineffective in deterring use (Nolin et al., 2002). Legalization entails new challenges of balancing the potential harms associated with cannabis use with potential societal benefits, including the likely substantial government revenues accruing from its sale. Going forward with legalization, many lessons can be learned from alcohol and cannabis legalization in other jurisdictions. In response primarily to major social problems associated with excessive use, alcohol was banned in several Canadian provinces and the U.S. in the 19th and early 20th centuries with benefits of lower per capita consumption and alcohol-related harms (Blocker, 2006). However, in jurisdictions with prohibition the illicit distribution of alcohol by organized crime was common, courts were clogged with drink related prosecutions, unscientific alcohol curricula were taught to students, and prohibition was largely viewed negatively (Blocker, 2006). Despite some public health benefits including reduced deaths from liver cirrhosis (Blocker, 2006), it was apparent to many that the costs of prohibition outweighed the costs of legalization. Close to a century after prohibition, alcohol has been gradually liberalized, propelled by public preferences and pressures from vested commercial interests. Concurrently, the acute harms such as alcohol-related traffic crashes and violence, and chronic health conditions, such as liver cirrhosis, have escalated. Today, alcohol has been rated as more harmful to oneself and others than any other drug (Nutt et al., 2010).

Population surveys show that a large proportion of the Canadian population has used cannabis, which suggests normalization. About 11% (3.1 million) of Canadians reported use in the past year (Health Canada, 2013) and over 40% have used cannabis in their lifetime. In 2002, 1.5 million Canadian citizens were reported to have criminal records for possession of cannabis (John Howard Society, 2002). In 2014, over 66% of drug related crimes were reported for cannabis in Canada, with approximately 68,000 total cannabis offences and about 57,000 of those were for possession (Boyce, 2015). The negative impacts of criminalization against cannabis users have been documented (Erickson, 1980). As pointed out by the Senate Special Committee on Illegal Drugs, laws are, ideally, a source for normative rules that should be used sparingly while respecting the freedoms of individuals to seek their own well-being, and current supply-reduction policies have been ineffective (Nolin et al., 2002). Given that the annual costs of police enforcement and sentencing for crimes related to all types of illicit substances were estimated at 1.4 billion dollars a decade ago (Rehm et al., 2006), annual enforcement costs for cannabis alone likely exceed 1 billion dollars per year today. Under most models, legalization allows profits from sales to be diverted to governments. These factors have all likely contributed to the Federal government's commitment to legalize cannabis.

Prohibition of alcohol and cannabis was intended to minimize use of these substances and the associated harms to individuals and society, but enforcement became too onerous in relation to the popularity of these substances. The acute effects of cannabis can compromise short-term memory, increase anxiety, paranoia, and psychotic symptoms, and reduce perceptual abilities that can increase the likelihood of injury, especially while driving a car (Hall, 2014). Negative effects from chronic use include possible dependency, respiratory illnesses and possible cancers when smoked (Gordon et al., 2013; Hall, 2014). There is a possible link between chronic use and schizophrenia (Minozzi et al., 2010, Murray et al., 2007) and rare cases of hyperemesis syndrome, characterized by nausea and vomiting (Wallace et al., 2011). In terms of positive effects, many users report pleasant euphoric effects, social benefits and some medicinal effects noted later in this report.

As members of the Centre for Addictions Research of BC (CARBC), University of Victoria with expertise regarding the societal impacts of substance use, we have prepared this Bulletin to recommend some overarching strategies to help reduce potentially negative consequences of legalized cannabis. We are all currently actively involved in conducting research into substance use issues in society and have related graduate training in diverse disciplines, including Anthropology, Criminology, Epidemiology, Nursing, Philosophy, Psychology, and Sociology (see more details of our backgrounds and research at www.carbc.ca). Our intent is not to debate legalization, which has been addressed in several policy documents (see Nolin et al., 2002, Centre for Addiction and Mental Health, 2014); we all agree that criminalization of cannabis has yielded few benefits. In this Bulletin, we recognize that legalization provides opportunities to prevent and reduce harms that could not be adequately addressed in a criminalized environment. We take a public health approach and recommend some key policies and practices that aim to strike a delicate balance between ensuring fiscal benefits for government and the social responsibility of regulating substances that are potentially harmful to the health of Canadians. This Bulletin is divided into two main sections: (1) regulations for sales of cannabis, and (2) other strategies to minimize harms from use.

Governance of cannabis sales

Historically, the prohibition of alcohol in Canada was instituted in the existing provinces as well as in the Northwest Territories between 1856 and 1919, but later repealed in various years, with Prince Edward Island being the final province to legalize alcohol in 1948 (Hallowell, 1988). As well, municipalities could prohibit the sale of alcohol and today, several Canadian communities, primarily indigenous reserves, are currently "dry" with no sales outlets and alcohol use forbidden. Many of these communities are facing extreme challenges from being alcohol free while surrounded by outside jurisdictions where alcohol is readily accessible. Bootlegging and smuggled black market alcohol is common. The lesson to be learned is that such disparities between jurisdictions can create additional social problems for those areas that attempt to prohibit sales, even though there is strong evidence that dry communities have significantly lower rates of alcohol-related deaths compared with other similar but not "dry" communities.

Although the Federal government plans to introduce legislation in 2017 to eliminate cannabis possession and sales from the criminal code, the commercial sale of cannabis may still be restricted by provincial/territorial and municipal rules and regulations. This means that although the use and sale will be legal, not necessarily every province/territory and municipality will permit the sale or use of cannabis in all areas or indeed anywhere. Similarly, the sale and distribution of alcohol in Canada is governed by the provinces/territories, which has resulted in diverse systems of liquor distribution, from privately controlled to government controlled stores, with regulatory practices for beer, wine and spirits varying by area. Lessons can be learned from the Federal regulation of alcohol production and sales (in the Excise Act).

R1 We recommend that the Federal government provide guidelines regarding the production and sales of cannabis, including recommendations for regulations aimed to minimize harms to users.

Type of distribution system

Research on alcohol distribution indicates that government controlled stores are more effective than privately controlled stores in addressing issues around mitigating negative public health consequences related to alcohol use (Her et al., 1999; Stockwell et al., 2012). Government controlled distribution systems can better control pricing, labelling, overall outlet density, enforcement of minimum age restrictions and also restrictions on sales to impaired customers. Government systems are best suited to minimizing harms. Since cannabis is relatively simple to grow, it will be impractical to prohibit cultivation of small quantities.

R2 We recommend cannabis be sold through government controlled stores and that individuals should not be prohibited from growing specified quantities for personal use.

Labelling of products

A major benefit of legalization is that products can be regulated and standardized so that consumers are better informed regarding their constituents. Increased awareness by consumers can be helpful to mitigate potential negative consequences from use.

Legalization should require chemical analysis of products so that purchasers are aware of the amount of THC (the main psychoactive constituent) and CBD (an important constituent for medicinal use) in the product before use. Federally mandated labelling requirements should assist in helping consumers understand differences among cannabis products.

Studies of alternative health-related labelling for alcohol indicate that labelling the number of "standard drinks" in a container assists consumers to estimate whether they will have exceeded national low risk drinking guidelines (Osiowy et al., 2015). Labelling of percent alcohol content alone was shown to be insufficient. The development of standardized doses, similar to the idea of a "standard drink," could allow users to be better informed of the amount of THC in a given product. Labelling products in terms of standard doses of THC (e.g. "joints") would enable consumers to better follow future low risk cannabis use guidelines (Fischer et al., 2011). Research has been conducted on how to best define "standard joints" (Zeisser et al., 2012), which could be helpful in defining standard doses, including different product forms, such as concentrates (e.g. hashish, oils) and edibles.

R3 **We recommend standardized labelling on all cannabis products. Standardized labelling should include, as a minimum, the percent of THC, the weight of each product, and the number of standard doses (based on THC content), and the percent of cannabidiol (CBD). The amount of THC in an "average joint" may be a useful basis for defining a standard dose.**

Types of cannabis products

Various cannabis products have different associated risks. Legalization provides an opportunity to put in place regulations to minimize the potential harm from cannabis use. Research suggests that marijuana smoking is harmful to the lungs even though the impact may be different than for tobacco (Tetrault et al., 2007). Vaporizers can be used to extract THC at low temperatures below the point of combustion of plant matter and thus reduce the harms associated with smoke. Cannabis and its constituents can also be taken as edibles, tinctures, pills or in other forms. Although these forms of use eliminate potential lung problems, they can pose other risks. For example, when used orally, the effects are considerably delayed making it harder for the person to sense immediately the impact, potentially leading to consumption of a higher dose than desired (Hartman et al., 2015a); in the hands of children, tasty edibles or other oral products could be problematic.

R4 **We recommend that cannabis policies and regulations recognize the diverse harm potential of different cannabis products and that policies and regulations seek to encourage the development and use of less harmful products and mitigate the harms wherever possible. Cannabis products that may be attractive to children should be sold in tamper resistant containers to prevent accidental harm.**

Pricing of products

A balance must be struck in relation to prices for cannabis. If prices are too high in comparison to production costs or prices in neighboring jurisdictions, illegal markets can emerge (Kleiman, 2015). However, higher absolute prices and minimum prices of alcohol have been shown to be related to lower rates of alcohol-related morbidity and mortality (Stockwell et al., 2013; Wagenaar et al., 2010).

R5 We recommend that minimum prices be established per standard dose (based on THC content) of cannabis and that Canadian jurisdictions strive for a consistent approach to pricing. The pricing regulations should seek to minimize the negative health impact of cannabis while also minimizing the potential for a black market.

Medical cannabis

CBD is a non-psychoactive constituent in cannabis that has been studied for its medicinal effects, such as to reduce anxiety (Brenneisen, 2007). Strains of cannabis vary considerably in terms of their THC or CBD contents. These cannabis compounds can produce analgesic effects (Watson et al., 2000), and have been found to be beneficial for some neurological conditions (Koppel et al., 2014). In Canada since July, 2001, cannabis could be prescribed by physicians to patients for a variety of medical conditions but barriers to access have existed (Belle-Isle et al., 2014). More research is needed to better understand the different benefits of different chemical compounds in cannabis. Currently, few insurance plans cover the costs of cannabis for medicinal purposes, although this will likely change in a legalized environment. Cannabis as a medicine is distinct from cannabis as a recreational drug and should be treated as such in a regulated market.

R6 We recommend that products derived from cannabis for medicinal purposes and prescribed by doctors be dispensed by pharmacists as safety standards for medical products are at a higher standard and ingredients and products should be specific to address a particular medical condition.

Age restrictions

Use of cannabis by youth is a major issue with respect to legalization. Past year use of cannabis is highest among 18- to 24-year-olds (Statistics Canada, 2015). While cannabis use among Canadian young people seems to have decreased since 2002 (Public Health Agency of Canada, 2008), according to UNICEF, Canada has the highest percentage among rich countries of the world of children aged 11, 13 and 15 who report having used cannabis in the last 12 months (UNICEF Canada, 2013). Given that youth have been most likely to use cannabis under the criminalized regime, it is unlikely that age restrictions for sales will be successful in preventing all youth from using cannabis. However, age restrictions may help delay the onset of use for some.

R7 We recommend sales be subject to the same age restrictions as currently used for alcohol in each province. Any penalties for sales violations should be aimed at sales personnel and adults rather than those who are underage.

Advertising

Research on alcohol advertising indicates that promotion encourages use (Anderson et al., 2009). A particular concern is advertising aimed at youth (Saffer, 2002). A related concern is that much alcohol advertising is seen by underage youth and that, despite attempts by the alcohol industry to self-regulate content, promotions that glamourize drinking can still be found, especially in social media and on the internet generally. Some alcohol products, such as alcopops, are particularly attractive to youth (Saffer, 2002).

In Colorado, where cannabis was legalized in 2012, numerous cannabis-infused products including chocolates and candy can be purchased. As noted above, these products may be less harmful than smoking, but they also can be appealing to children and youth. The State of Colorado has taken the position that cannabis advertising should be regulated in a way similar to alcohol and has developed a comprehensive set of regulations (Colorado Department of Revenue, 2013).

R8 We recommend that cannabis advertising be subject to a well-developed set of regulations similar to those developed to regulate alcohol advertising and that these regulations give particular attention to prohibiting any advertising aimed at children and youth. A public complaints mechanism should be set up to allow reporting infringements and compliance enforcement should be a priority.

Other Strategies to minimize harms from cannabis use

As noted in the introduction of this Bulletin, use of cannabis can cause some short and long term negative consequences, which should be addressed under a new system.

Driving while under the influence of cannabis

Driving under the influence of cannabis can be dangerous, which legitimates appropriate legal measures to protect the well-being of motorists and others (including, e.g., graduated licensing programs with zero tolerance of impairment in novice drivers). Enforcement of laws against impaired drugged driving is challenging to implement because the validity of drug tests for cannabis to assess impairment ranges from poor to moderate. Although cannabis use can be detected with oral fluids, urine, hair and sweat, studies have not found that these types of tests are accurately related to crash risk. Only blood tests for THC provide a moderately valid diagnosis for impairment. A meta-analysis of THC levels in blood and crash risk shows a significant relationship between the two (Asbridge et al., 2012); however, not enough research is available for empirically-established precise thresholds for impairment. The literature does provide some helpful points of reference. Empirical evidence suggests that a threshold of 6-8 ng/ml THC in blood is roughly equivalent to a blood alcohol content (BAC) of 0.05% alcohol (Grotenhermen et al., 2007). A recent laboratory style study by Hartman et al. (2015b) found that 13.1 ng/ml THC in blood corresponds to a BAC of 0.08%. Thresholds and penalizing approaches to driving under the influence vary considerably across countries (Wong et al., 2014). In Canada, criminal convictions for drug impaired driving have relied on signs of impairment visible to police, usually followed by a positive drug test of urine, blood or oral fluids - a sequential procedure that reduces the likelihood of false positives for detecting impairment. A recent intervention study of impaired driving by alcohol in BC found that civil sanctions are both expedient and effective in reducing alcohol-related crashes (Macdonald et al., 2013).

R9 We recommend a system similar to that in BC for alcohol related driving which also includes civil sanctions and allows for criminal code violations. Those suspected of driving under the influence of cannabis under a criminal code should be given a choice of the type of biological sample to produce and be informed that blood tests are the most accurate form of drug testing for impairment. Conviction could result for those who refuse to provide any sample but have visual indicators consistent with impairment. A THC threshold of 6 ng/ml for a blood sample should be needed for penalization to apply.

Education and Prevention

The change in the legal status of cannabis presents an opportunity to engage Canadians in meaningful drug education initiatives. A health promotion approach to cannabis education would place healthy individuals, families and communities at the forefront. Health promotion efforts should enable people to increase control over their health and, ultimately, reduce the potential health and social harms associated with cannabis use. This means ensuring easy access to evidence informed information that reflects the complexity of the issues, opportunities for critical thinking and interpersonal dialogue and the means to develop personal and social skills. One promising drug education approach is represented by the iMinds program in BC. As we repeal prohibition on cannabis, we need to invest in such health promotion approaches.

R10 We recommend investing in effective strategies to increase Canadians' health literacy related to drug use to equip them to make informed healthy choices about cannabis use. This should involve delivering theoretically sound drug education programs in all schools as well as a range of evidence-informed public education strategies.

Treatment

Increased frequency and quantity of cannabis use can lead to cannabis use disorders. Although research shows that a lower percent of users transitions to dependence (the most severe level of disorder) from cannabis use than from nicotine, cocaine or alcohol use (Lopez-Quintero et al., 2011), substance use treatment agencies report considerable admissions for cannabis disorders.

R11 We recommend that a high percentage (10% or more) of revenue gains from the sale of cannabis products be directly diverted to health promotion, education, research and treatment.

Enforcement

Law enforcement should be directed toward prevention of a black market, activities that may harm others, such as cannabis impaired driving, and aimed at ensuring standards of public health. Regulations similar to tobacco to protect those from second hand smoke should apply.

R12 We recommend that enforcement against violations of regulations related to cannabis should be treated similarly to current regulations related to tobacco and alcohol.

Conclusions and summary of recommendations

Going forward with cannabis legalization, many lessons can be learned from the Canadian experience with legalization of alcohol. Over time, Canadian populations have acclimatized to legal alcohol and have endorsed easier access. However, cannabis like alcohol is no ordinary commodity and a delicate balance is needed between the pressures for liberalization and public and individual health harms (Babor et al., 2010).

The onset of legalization will likely be associated with a substantial new economic sector largely geared towards maximising profitability, and a host of new cannabis products that will emerge to encourage use. If effective regulatory pressures can be applied, these products will include smokeless alternatives that will reduce long-term health consequences but may increase negative acute and social consequences. Legalization also presents more open opportunities for objective research on benefits and harms.

The recommendations in this report are primarily aimed at regulations that should be mandated at the Federal level and provide guidance to jurisdictions that choose to legally sell cannabis.

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Views in this Bulletin are shared by the authors and do not necessarily reflect the views of other members of CARBC or the University of Victoria.

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