Marijuana Policy Supplement

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I. Introduction

Marijuana, or cannabis, is the most commonly used illicit drug in the United States. Attitudes about its recreational and medicinal use have evolved significantly over the past 25 years, leading to legalization and decriminalization in a majority of states.[1,2] The drug's potential therapeutic and medicinal properties come from its multiple compounds, particularly delta 9-tetrahydrocannabinol (THC) and cannabidiol (CBD). An AHA scientific statement[2] published in August 2020 critically reviews the medicinal and recreational use of cannabis from a clinical and public health perspective by evaluating its safety and efficacy profile, particularly in relationship to cardiovascular health. Key findings from this statement are summarized in Table 1.

The consumption of cannabis products is increasing considerably, particularly among youth and young adults.[2] Newer strains of marijuana are more potent, leading to risks including anxiety, agitation, hyperemesis syndrome, paranoia and psychosis.[1] The U.S. Surgeon General has warned that recent increases in access to and potency of marijuana, along with misperceptions of the safety of marijuana, endanger youth, adolescents and the developing fetus.[1] Under the 1970 Controlled Substances Act, marijuana is designated as a Schedule I drug with the highest level of control, a substance as having no safe medical use with a high risk of abuse or misuse. Schedule I substances are illegal under the law. However, as of May 2020, 33 states and Washington, D.C. have legalized marijuana for medical purposes, and 11 states and DC have legalized the drug recreationally, setting up a profound disconnect between state and federal law. The cannabis market continues to grow across the country. Legal sales topped $12 billion in 2019 and are forecast to top $30 billion annually within the next four years.[3] In 2019, the legal cannabis industry employed nearly 250,000 people, a 15% increase from 2018.[4]

This policy supplement provides additional guidance (summarized in Table 2) for the American Heart Association in key policy areas related to cannabis, including legalization, public health infrastructure, workplace safety/drug testing, criminal and social justice, Food and Drug Administration (FDA) regulation of drugs and food and nutritional supplements, reducing youth use, school policy and expanding research at the federal and state levels.

II. Legalization

Legalization of marijuana for medical purposes should align with patient safety and efficacy. Legalization of marijuana for recreational use will remain a significant public health concern until we have more research on safety and long-term population health effect across the life course and we fully understand the equity and social justice impact of these laws. Cannabis should be removed from its Schedule 1 categorization in the U.S. Controlled Substances Act to allow for more robust research and a more coordinated approach at the state and federal levels regarding marijuana regulation and legislation.

III. Public health infrastructure with legalization

In 2014, Colorado became the first state to legalize recreational and medical marijuana use. The state's experience has shown that a robust public health infrastructure is essential for effective protection of population health. As states legalize both medical and recreational use of marijuana, they have to reconcile the proliferation and use of products in the statutory and regulatory environment. Colorado, for example, has harmonized packaging and laboratory testing requirements for medical and recreational marijuana.[5] Health care providers should have clear direction on how they can discuss cannabis use as a therapeutic option in accordance with state regulation. There is also significant variation among states in how they define "medicinal." Ideally, these definitions should be harmonized.

If marijuana is legalized, federal, state and local governments should develop, adopt, monitor and evaluate strict regulatory mechanisms to control marijuana production, sales and use while advancing the public health goals of preventing access by minors, protecting and informing consumers of legalized marijuana and protecting third parties from unwanted consequences of legalized marijuana use. [27] The public health framework should monitor patterns and health effects of marijuana use, develop robust enforcement around product integrity, sales tracking and food safety, ensure a competent and informed public health work force and conduct mass-market health communications through public awareness and education campaigns on recreational marijuana laws.[6] The public health infrastructure should be adequately funded to minimize the impact of substance use on population health, especially in under-resourced communities. It is imperative that states prevent recreational access and availability to youth and adolescents, particularly in the context of the rising e-cigarette epidemic. Marijuana should be tightly integrated into comprehensive tobacco control and prevention efforts such as age restrictions for purchasing, retailer compliance, excise taxes, comprehensive smoke free air laws, professional education, screening within the clinical environment and cessation coverage. These efforts should be adequately funded and at least some portion of the revenue from marijuana taxation should be directed toward programs and services that improve public health. States need a supportive, robust public health infrastructure to address the entire public health response that incorporates surveillance, prevention, counter-marketing and public safety.

IV. Workplace safety/drug testing

Employers and employees are caught in the federal/state divide on cannabis law. Testing positive for marijuana in the workplace can jeopardize hiring, acquiring employment and job security. Tetrahydrocannabinol (THC), the chemical compound in marijuana, metabolizes quickly into compounds that can remain in the body for days to weeks after consumption.[7] Most tests detect THC metabolites, which only can indicate prior usage but cannot assess impairment or the current state of the user.[8] Since marijuana is still classified as a Schedule 1 drug under federal law, states and localities now face the decision of how to mitigate worksite safety laws and policies related to the legal use of marijuana among their employees.[9] Employers that receive federal grants and federal contractors face a further dilemma as they are required to uphold federal zero-tolerance and drug-free policies in states where medicinal and recreational marijuana is permitted. Although these work environments are regulated by the Drug Free Workplace Act, the act does not require employers to conduct mandatory drug tests and has left regulation and enforcement up to states.[10] Additionally, more restrictions are placed on public employers than private employers. Many private employers are not required to conduct drug testing, and many states and local governments limit or prohibit testing unless deemed necessary by the nature of the job.[11]

The increasing number of states legalizing marijuana has resulted in a rising rate of failed drug tests among employees. According to Quest Diagnostics, a nationwide clinical laboratory used by employers, the rate of positive tests in 2010 increased by 35 percent in places where marijuana was illegal and by 71 percent in states where it was legal.[12] Some states and cities have prohibited employers from conducting pre-employment marijuana tests, while implementing certain exceptions for safety-sensitive positions and jobs that are subject to federal regulation.

It is important to consider the implications of marijuana legalization on the workforce, including the possibility of absenteeism and presenteeism.[13] Protection for registered medical marijuana patients continues to be a divisive issue for states. Although some states have passed legislation to prohibit employers from discriminating against employees who use authorized medicinal marijuana, other states allow employers to fire employees who test positive for marijuana even if legal use is off-duty or for a medical condition.

Use of marijuana in or the near the workplace may impact productivity and safety. States must embrace evolving marijuana laws and consider appropriate accommodations and policies for employees who legally use marijuana. Additional workplace issues such as workers' compensation insurance, unemployment benefits qualifications and wrongful termination claims are further complicated by the lack of guidance on marijuana related incidences. A recent court ruling in Pennsylvania may serve as a precedent for workers across the country who fail a drug test for using a legal marijuana product.[14] The court ruled that an occupational therapist was eligible for unemployment benefits after she was fired by her employer for failing a drug test from a CBD product she was using for cancer treatment. Employers should establish and communicate clear policies regarding the use of marijuana and CBD products by employees, alignment with state and local statutes and the consequences on hiring, employment and job security.

V. Marijuana legalization and criminal and social justice

There is emerging evidence on the effects of marijuana legalization and decriminalization on equity and incarceration rates in the United States.

- Approximately 1.6 million people in the U.S. were arrested on drug-related charges in 2017, 40.4% of which were related to marijuana possession or sale.[15]
- Despite only comprising 31.5% of the U.S. population, 49.6% of people arrested for drug law violations are black or Latinx.[16]
- Adult blacks are more than three times more likely to be arrested for possession than whites, despite similar rates of use.[17,18]
- Racial disparities in arrests persist across the country and have not improved since 2010, even in states that have legalized and decriminalized marijuana.[19]
- In every state, blacks are arrested for marijuana possession at a higher rate than whites.[19]
- In Washington, DC, blacks are 11 times more likely to be arrested for public marijuana use in comparison to whites.[19]

Overall, marijuana arrests decrease after legalization.[19] However, racial disparities still exist in the enforcement of marijuana laws. For example, in Colorado, whites have experienced the greatest decrease (51%) in marijuana arrests while Latinx and blacks only experienced a decrease of 33% and 25%, respectively, between 2012 and 2014.[20]

Decriminalization and legalization of marijuana by states can have a varying effect on vulnerable populations. High rates of criminalization have strong implications for individuals and communities, as arrests and convictions are known to have negative impacts on school completion, federal financial aid, public housing, employment, custody determinations and immigration status.[21] For generations, black and Latinx communities have disproportionately suffered from criminalization rates related to marijuana use. These effects are still seen today with a high percentage of incarceration rates within these communities. Equity considerations must be integrated into policy development of marijuana related laws to ensure that racial and ethnic disparities are not further exasperated. Jurisdictions will need to consider the removal or expungement of criminal records of existing offenders, process of expungement for certain offenses, age restrictions, juvenile offenses and other legal implications and processes that may result from legalization and/or decriminalization.

States are currently considering the potential economic benefits of the cannabis industry. Those include increased tax revenue, job growth, funding for state-sponsored programs, possible reduction in law enforcement costs and some investment opportunities.[22] Despite the possible benefits of legalization, researchers encourage states to carefully examine socioeconomic consequences associated with legalization. Early studies have found that retailer density is high among minority and low-income communities.[23,24] It is important to consider the socioeconomic impact of legalization on under-resourced communities and formulate equitable strategies that counteract the multifaceted negative consequences that they have historically experienced.

In some states, revenue generated from marijuana sales and regulations has been reinvested into communities, youth and social good.[16] Colorado distributed $230 million of marijuana revenue to the Colorado Department of Education between 2015 and 2017 to aid in school construction, early literacy, and behavioral health.[16] Oregon distributes 40% of marijuana tax revenue to the state school fund, and 20% to drug and alcohol treatment.[16] California and Massachusetts plan to invest a share of their marijuana tax revenue in communities known to be heavily impacted by unequal drug law enforcement, more specifically low-income communities of color.[16]

VI. FDA regulation of THC-containing drugs and CBD in food and nutritional supplements

Through its drug approval process, FDA continues to focus on drugs derived from cannabis, including CBD. In addition to Epidiolex, FDA has approved THC-containing drugs.[25] The agency has approved Marinol and Syndros which include the active ingredient dronabinol, a synthetic delta-9-tetrahydrocannabinol (THC) for therapeutic uses in the United States, including for nausea associated with cancer chemotherapy and for the treatment of anorexia associated with weight loss in AIDS patients. Another FDA-approved drug, Cesamet, contains the active ingredient nabilone, which has a chemical structure similar to THC and is synthetically derived. Cesamet, like dronabinol-containing products, is indicated for nausea associated with cancer chemotherapy. In April 2020, the Drug Enforcement Agency descheduled Epidiolex, removing it as a controlled substance under the federal Controlled Substances Act, making it easier to access for patients who need it for therapy.

The 2018 Farm Bill[26] removed hemp-derived products from Schedule 1 status under the Controlled Substances Act, but the legislation did not legalize CBD generally. CBD generally remains a Schedule I substance under federal law. FDA issued a press release[27] following passage of the Farm Bill stating that CBD food and nutrition supplements are illegal. In May 2020 the agency held a roundtable to get input on how it should regulate these products, and some limited enforcement followed. What the agency will do beyond this will likely be delayed with the impact of the COVID-19 pandemic.

Acknowledging the great public interest around CBD and the hope it can have benefits to health, the FDA set out to evaluate cannabidiol products with the intention of educating the public on the risks of the products and to gather science in order to understand safety concerns as well as potential benefits to inform their regulatory approach.[28] This evaluation found that CBD is marketed in many different types of products such as oil, capsules, food products and chocolate bars. There is concern that the public will falsely think CBD products have been evaluated and approved by the FDA.[29]

The FDA's current focus is to educate the public about the safety risks associated with CBD that should be considered before using the products without a prescription from a health care provider.[28] Through the drug review process FDA determined that the risks of CBD usage outweigh the benefits.[29] Concerns over CBD usage include the potential for liver injury, gastrointestinal distress, changes in mood such as irritability or agitation, male reproductive toxicity and interactions with other medications that an individual may take.[29]

There are still many health aspects of CBD usage that are not clear and require further research, including the effects of CBD being used daily over a sustained length of time, the effects of CBD on the developing brain, the level of usage known to trigger associated risks and the health impact of different methods of consumption such as smoking, vaping and topical use.[29] FDA continues to work to answer these questions through public hearings and gathering of data.[29]

AHA supports further research on the effects of CBD on public health and safety and more robust regulation and enforcement by FDA on CBD products.

VII. Youth/Minors and School-level policy

The AHA supports laws and regulation that prevent recreational cannabis use by youth and adolescents. Research has shown that there are negative effects associated with marijuana use in adolescents on attention, memory, and learning.[29] Considerable evidence suggests that students who smoke marijuana have poorer educational outcomes and educational attainment, and a higher chance of developing dependence, using other drugs and attempting suicide, than those who do not smoke.[30,31]

This is especially concerning with the increasing use of e-cigarettes in youth and adolescents and the fact that students are using these devices to deliver marijuana in addition to nicotine. In 2019, nearly 15% of all US adolescents and 21% of high school seniors had vaped marijuana.[32] That translates to an additional 1 million middle and high school students using the drug.

Recreational marijuana use is illegal on school campuses under federal law. Adults who work in schools may be caught between state and federal laws and drug-free campus policies with drug testing. Under the Drug-Free Workplace Act, any employer, including a school district, that receives federal funding must operate a drug-free workplace or risk losing federal funding.[33] However, at least seven states and Washington, D.C. that have legalized medical marijuana have enacted laws or regulations allowing students to use the drug on school grounds. So far the federal government has not penalized any of those seven states.[34] New Jersey, Illinois, Colorado and Delaware allow parents to give their children non-smokable medicinal marijuana products at school, Colorado has expanded its law to allow school staff to administer the medication and Washington state and Florida allow school districts to decide whether to allow the drug on campuses. Maine expanded its state regulations to allow medical marijuana use at school.

Ultimately, states and school districts must develop consistent policies that address tobacco and marijuana use on their campuses for students and adults, and provide supportive, restorative approaches with enforcement that prioritize educational attainment and address mental health, social support, behavioral health, well-being and equity.

Expanding research at the federal and state levels

The Drug Enforcement Agency had issued regulations to expand the quantity and variety of marijuana that it permits for use in officially sanctioned scientific and medical research.[35] Under the Controlled Substances Act (CSA), anyone seeking to manufacture a Schedule 1 controlled substance must obtain a DEA registration. The CSA defines "manufacture" to include the planting, cultivation, growing or harvesting of a controlled substance. The review of these applications has been delayed due to DEA inaction and a Department of Justice review but is now moving forward after a legal challenge. This will represent significant progress since the DEA, for decades, has only allowed a single research facility at the University of Mississippi to grow and distribute marijuana for research.[36] The plants grown there are of poor quality and do not resemble the marijuana sold in states where it is legal. That makes it nearly impossible to conduct meaningful research on the health impact of the drug as it is consumed in the U.S. Registering more growers will allow additional strains of marijuana to be produced and made available to researchers. States are also supporting scientific discovery around cannabis by setting up their own research programs.

Legal barriers for research funding and clinical rials on marijuana should be removed. Additional research is needed on the epidemiology and trends in cannabis use, basic science, the health effects and equity impact of cannabis use across the lifespan, as well as research that informs clinical guidelines and describes the impact of cannabis use on health care utilization. Both state and federal governments should expand cannabis research.

Table 1: Top 10 Takeaways About Cannabis Use and Cardiovascular Disease[2]

1. Attitudes toward recreational and medicinal use of cannabis have rapidly evolved. As of March 2020, 47 US states, the District of Columbia, and four U.S. territories allow some form of cannabis use, while Canada and Uruguay now allow recreational use nationally.
2. Cannabis use has risen considerably over the past decade, particularly among individuals 18-25 years of age.
3. Cannabis formulations now include oral, sublingual, rectal, vaporized and smoked; however, regulation of these products is inconsistent, resulting in a lack of standard dosing, packaging and labeling.
4. Tetrahydrocannabinol (THC) and cannabidiol (CBD) can have both direct and Indirect effects on the cardiovascular system. THC may stimulate the sympathetic nervous system while inhibiting the parasympathetic nervous system, increase heart rate and supine blood pressure, cause platelet activation, and promote endothelial dysfunction and oxidative stress. CBD may reduce heart rate and blood pressure, improve vasodilation and reduce inflammation, and lower vascular hyperpermeability.
5. Safety signals have emerged regarding cannabis use and adverse cardiovascular outcomes, including myocardial infarction, heart failure and atrial fibrillation; however, there is a paucity of rigorously performed studies. An urgent need for carefully designed prospective short- and long-term studies regarding cannabis use and cardiovascular safety are needed.
6. Cannabis smoke contains many of the same carcinogens and mutagens as tobacco smoke. Consumers and health care providers need to be aware of the risk of smoking cannabis. Until the pathophysiology of e-cigarette or vaping product use-associated lung injury (EVALI) is better understood, vaping cannabis, especially when it is mixed with vitamin E acetate oils, should be avoided. Given the increased incidence of severe COVID-19 lung injury among tobacco smokers and e-cigarette users, the same association may exist for smoking or vaping cannabis, particularly among those with underlying cardiovascular conditions. If people choose to use cannabis for its medicinal or recreational effects, oral and topical forms may reduce some of these potential harms.
7. Cannabis use disorder, withdrawal and hyperemesis syndrome are serious adverse events that should be particularly discussed with chronic heavy users and recognized by clinicians.
8. Drug-drug interactions can exist and should be anticipated as THC has the potential to inhibit CYP 3A4/4, 2C9, 2C19, and 2D6 while CBD can inhibit CYP 3A4/5, 2C19, 2D6, and 1A2.
9. A lack of definitive evidence exists regarding the cardiovascular effects of cannabis in several vulnerable populations such as adolescents, older adults, pregnant women, transplant recipients, and those with underlying cardiovascular disease.
10. Clinicians need greater knowledge to the various cannabis products and health implications during their initial training and continuing education, and must be alert to the possibility that the use of cannabis or its potent synthetic analogues might be the underlying cause of cardiovascular events and other health implications.

Table 2: Marijuana Policy Summary

Legalization	• Legalization of marijuana for medical purposes should align with patient safety and efficacy. • Legalization of marijuana for recreational use will remain a significant concern until more research can be conducted on the safety and long-term population health effects across the life course, and we fully understand the equity and social justice impact of these laws. • Cannabis should be removed from its Schedule 1 categorization in the U.S. Controlled Substances Act to allow for more robust research and a more coordinated approach at the state and federal levels regarding marijuana regulation and legislation.
Public Health Infrastructure	• For states that do legalize cannabis, a robust public heath infrastructure encompassing prevention, surveillance, counter-marketing and public safety is imperative. • States should harmonize their definitions for medical marijuana. • The public health response should prevent access by minors; include robust enforcement around product integrity, sales tracking and food safety verification; ensure a competent and informed public health work force; protect third parties from unwanted consequences of legalized marijuana use; and leverage mass-market public awareness and education campaigns. • Marijuana should be carefully integrated into comprehensive tobacco control and prevention efforts.
Workplace Safety and Drug Testing	• Employers should establish and communicate clear policies regarding the use of marijuana and CBD products by employees, alignment with state and local statutes and the consequences on hiring, employment and job security.
Marijuana Legalization and Criminal Justice Reform	• Jurisdictions will need to consider the removal or expungement of criminal records of existing offenders, age restrictions, juvenile offenses and other legal implications and processes that may result from legalization and/or decriminalization of marijuana. • High rates of criminalization have strong implications for school completion, federal financial aid, public housing, employment, custody determinations and immigration status. • Revenue generated from marijuana sales and regulations should be reinvested into public health infrastructure, under-resourced communities and address youth and adolescent prevention and cessation. • For generations, black and Latinx communities have disproportionately suffered from higher criminalization rates related to marijuana use. Black and LatinX people comprise 31.5% of the U.S. population, but they constitute 49.6% of people arrested for drug law violations. • Equity considerations must be integrated into policy development around marijuana laws to reduce racial and ethnic disparities.

FDA Regulation of CBD in Food and Nutritional Supplements and Prescription Drugs	• The AHA supports comprehensive FDA regulation of CBD products and standardization of manufacturing and labeling to quantify THC and CBD content according to USP reference standards. This should include over-the-counter topical CBD products. • Packaging should convey a meaningful "unit" of consumption (following alcohol ABV example), as well as clear differentiation of cannabis products from food. • The American Heart Association supports further research on the effects of CBD on public health and safety and more robust regulation and enforcement on products advertising CBD health benefits without FDA approval.
School level policy and youth use	• The AHA supports laws and regulation that prevent recreational cannabis use by minors. • Ultimately, states and school districts must develop consistent policies that address tobacco and marijuana use on their campuses for students and adults, and provide supportive, restorative approaches with enforcement that prioritizes educational attainment and addresses mental health, social support, behavioral health, well-being and equity.
Expanding Research	• The American Heart Association supports removing the legal barriers for research funding and clinical trials. Additional research is needed on the epidemiology and trends in cannabis use, basic science, the health effects and equity impact of cannabis use across the lifespan, as well as research that informs clinical guidelines and describes the impact of cannabis use on health care utilization. Both state and federal governments should expand cannabis research.

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