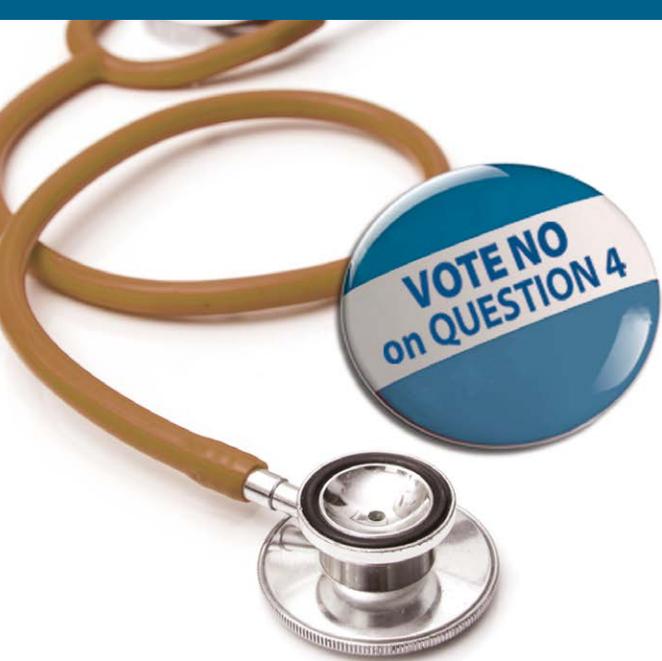




MASSACHUSETTS
MEDICAL SOCIETY

Every physician matters, each patient counts.



Ballot Question 4: Recreational Marijuana in Massachusetts

Information for Physicians

Bad for kids. Bad for public health.

The Massachusetts Medical Society Opposes Question 4

Here's why:

- Recreational marijuana has negative health and public health consequences including addiction, cognitive impairment, and motor vehicle accidents.
- Children, adolescents and young adults are at particular risk for negative consequences.
- Edible marijuana products are very potent and would be legal under this law.
- This ballot question requires no public health oversight and earmarks no revenue for public health.

Inside

- Highlights and Analysis of the Full 24-page Ballot Initiative
- How Marijuana Affects Health
- The Risks of Marijuana Use: What the Research Tells Us
- Reports of Adverse Public Health Outcomes Following Legalization of Recreational Marijuana in Other States
- Select Resources
- Who Opposes This Ballot Question?

Dear Colleague:

On November 8, Massachusetts voters will decide an important issue that will affect the public health of the Commonwealth: whether to approve Question 4, Legalization, Regulation, and Taxation of Marijuana, which would make the sale of recreational marijuana legal in this state.

Massachusetts Medical Society (MMS) policy opposes the use of recreational marijuana, and consistent with that policy, and after close review of the ballot question, the Society has stated its opposition to Question 4. The MMS has joined the Campaign for a Safe and Healthy Massachusetts, a coalition of health care, business, education, law enforcement, government and patient advocacy leaders who are strongly opposed to recreational marijuana.

Experience in other states has shown us the harm that legalizing recreational marijuana can cause. The Massachusetts ballot question raises more concerns: it does not have the provisions those states have to mitigate public health risks. The question has no provision for direct revenue to public health, prevention, education, treatment, or research. It would also allow for the sale of marijuana edibles, including candy, drinks, and snacks — products that are particularly alluring to children and adolescents.

Question 4 is an initiative of the marijuana industry, which has been called the next Big Tobacco. Marijuana is being sold to the public without information about the harmful health effects, and without a research base to guide standards or regulations on ingredients, advertising, serving sizes, or warnings.

The MMS believes the health of the people of Massachusetts, particularly its children, adolescents, and young adults, is at stake with this ballot question. We hope the information contained in this brochure will help you answer questions your patients may ask about this issue. More information and resources are available on our website at www.massmed.org/marijuana.

Sincerely,

James S. Gessner, M.D.

President, Massachusetts Medical Society



The Ballot Question: A closer look

Election Day is November 8, 2016. All Massachusetts ballots will include Question 4, whether or not to legalize recreational marijuana, which reads:

Legalization, Regulation, and Taxation of Marijuana

A Yes Vote would allow persons 21 and older to possess, use, and transfer marijuana and products containing marijuana concentrate (including edible products) and to cultivate marijuana, all in limited amounts, and would provide for the regulation and taxation of commercial sale of marijuana and marijuana products.

A No Vote opposes this proposal to legalize recreational marijuana. A 'no' vote does not affect the law on medical marijuana, which is legal in the state.

The full text of the ballot initiative, containing 24 pages of provisions that would go into effect if the measure passes, can be found on the Massachusetts Attorney General's website, www.mass.gov/ago/docs/government/2015-petitions/15-27.pdf

A review of the full ballot question reveals troubling details that favor the marijuana industry and fail to protect the health of Massachusetts residents:

- **The ballot question lacks any public health oversight or authority in the development of regulations.**
 - The state Treasurer, not any health agency, will have ultimate oversight, and will appoint a three-member Cannabis Control Commission, which will be responsible for issuing regulations and for clarifying and enforcing laws and regulations, including security, packaging, testing requirements. (Ballot, Sections 3 and 4)
 - The Governor would appoint 15 experts, including two in public health, to a Cannabis Advisory Board. However, the initiative does not provide the Board with any authority to amend or oppose regulations or interpretations of laws or regulations.



- **Tax revenue will be substantially lower than in other states.**
 - If Question 4 passes, recreational marijuana will be subject to a 3.75% sales tax, and up to a possible additional 2% local tax. (Ballot, Section 4) By comparison, Washington State imposes a 37% tax, Colorado imposes a 29% tax, and Oregon and Alaska a 25% tax.
- **No revenue is earmarked for health care, education, prevention, or treatment programs.**
 - The only taxes proposed by the ballot questions are for administration and enforcement, with any excess going to the state's General Fund. Other states designate a portion of revenue for public health purposes. (Ballot, Section 4)
- **Cities and towns have restrictions on how they can limit retail marijuana establishments.**
 - Cities and towns may not entirely prohibit retail marijuana establishments, except by passage of a referendum by the voters of the city or town. However, the language of the initiative is sufficiently complex and vague such that cities and towns attempting to limit marijuana establishments could be subjected to costly litigation. (Ballot, Section 5)

- **The ballot question would allow for personal cultivation of marijuana, of up to 12 plants per premises, and personal possession of up to 1 ounce. (Ballot, Section 5)**

How does marijuana affect health?

Marijuana contains cannabinoids which bind to receptors in the endocannabinoid system. Two of these cannabinoids are delta-9 tetrahydrocannabinol (commonly known as THC) and cannabidiol.¹

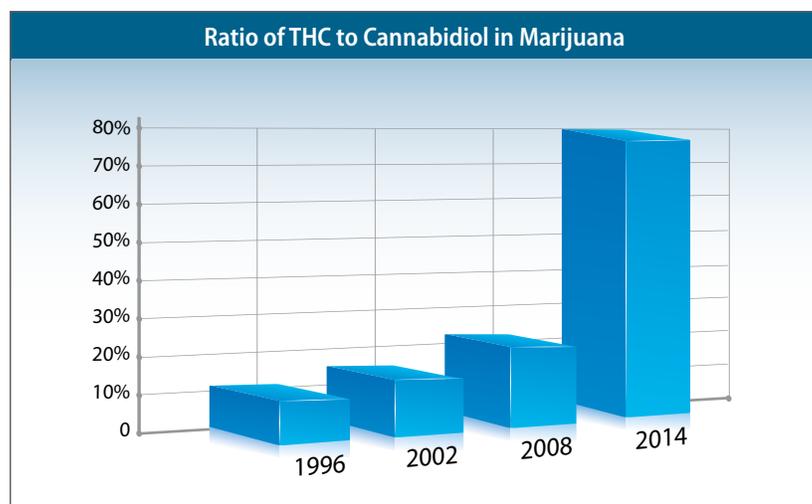
The THC/Cannabidiol Ratio

THC is primarily responsible for the psychoactive effects of marijuana, binding to receptors in the brain that are responsible for cognition, memory, reward, pain perception, and motor coordination. THC causes the “high” — the sense of euphoria, relaxation, and altered senses — users get from marijuana.²

Cannabidiol (CBD) is the other main cannabinoid in marijuana. Cannabidiol regulates the body’s response to other cannabinoids and in general, has a moderating influence on the effects of THC. Cannabidiol reduces THC’s psychoactivity and reduces the craving for THC and the likelihood of developing psychotic symptoms.³ The relative amounts of THC and cannabidiol that a user receives vary from plant to plant and by the form that the user consumes.

Today’s Marijuana Is Much Stronger than a Generation Ago

There’s been a marked increase in the concentrations of THC in marijuana over the last few decades, while the cannabidiol concentration has been decreasing. In 1989, THC concentration in marijuana was about 2%. By 2008, the THC concentration had increased to 14%. Meanwhile, the concentration of cannabidiol decreased from 0.24% in 1996 to 0.08% in 2008.⁴ From 1995 to 2014, the ratio of the average concentration of THC to cannabidiol in marijuana increased from about 15% to almost 80%.⁵ This increase in average THC content as well as THC/cannabidiol ratio has significant implications for rates of adverse effects including psychosis and addiction.³



What are the risks of marijuana use?

Marijuana is classified as a Schedule 1 drug, which has made obtaining the drug for clinical research purposes extremely difficult. In August, the U.S. Drug Enforcement Agency announced a policy change to expand access to marijuana for research purposes. Research that has been done raises serious concerns about detrimental effects on individual and public health and safety:

Addiction

- Marijuana can cause the classic characteristics of an addictive substance, including craving, tolerance, dependence, continued use despite adverse effects on one's life, and withdrawal symptoms. Withdrawal symptoms can include irritability, sleeping difficulties, dysphoria, craving, and anxiety.⁶
- In the United States, marijuana is the third most common cause of drug dependence after tobacco and alcohol.⁷
- Nine percent of those who try marijuana will become addicted. For those who start using as teenagers, this increases to approximately 17%, and for those who use marijuana daily, the rate of addiction is as high as 25% to 50%.⁸

Cognitive Impairment and Adolescent Brain Development

- Adolescents who engage in low to moderate marijuana use experience an increase in observable attention and academic problems when using marijuana at least monthly.⁹
- Those under age 15 who use cannabis are at increased risk for dropping out of school, and for dissatisfaction with their lives and relationships.¹⁰
- Academic performance in adolescents suffers with marijuana use, and is weakest among those using marijuana at least weekly.¹¹
- Marijuana use has been associated with memory impairment; higher levels of use are correlated with worse outcomes on verbal memory testing in middle age.¹²
- Young adults who chronically smoke marijuana showed a loss of brain gray matter, which is responsible for motivation, emotional state, and affective processing.¹³

Increase in Motor Vehicle Accidents

- The use of marijuana increases the risk of motor vehicle accidents.¹⁴
- The risk for fatal crashes increases, most markedly among those aged 16–20, when alcohol is combined with other drugs, including marijuana.¹⁵

Risk during Pregnancy

- Pregnant women who smoked cannabis had fetuses with growth restrictions, reduced head circumference, and lower birth weight in mid- and late pregnancy compared to non-exposed fetuses.¹⁶
- Women who used cannabis during pregnancy had higher rates of spontaneous preterm births.¹⁷

Reports of adverse public health outcomes following legalization of recreational marijuana in other states

States that have legalized recreational marijuana have seen troubling public health effects:

Youth Access to Marijuana

- The number of children under 10 seen at one Colorado children's hospital for marijuana exposure almost doubled in the two years year before and after legalization. The median age was 2.4 years.¹⁸
- After recreational marijuana legalization, 11.16% of Colorado youth ages 12 to 17 years old were considered current marijuana users compared to 7.15% nationally. Colorado ranked third in the nation and was 56% higher than the national average.¹⁹
- Drug-related suspensions/expulsions from schools increased 40% from 2008-2009 to 2013-2014, after recreational marijuana legalization in Colorado. The vast majority were for marijuana violations.¹⁹
- Youth aged 12 to 17 years old who had used marijuana in the past month increased 20% in the two year average following legalization of recreational marijuana in Colorado, compared to the two-year average prior to legalization. Nationally, youth past month marijuana use decreased 4% during the same timeframe.²⁰

Edibles

- Colorado saw an increase in hospital emergency room visits by children, adolescents and adults following intentional or accidental exposure to edibles.²¹



Emergency Room Visits

- After recreational marijuana legalization in Colorado, the number of marijuana-related emergency room visits increased 29%, and marijuana-related hospitalizations increased 38%, in only one year.²⁰

Motor Vehicle Accidents

- Marijuana-related traffic deaths increased an average of 48% in the three years following legalization of recreational marijuana compared to the three years prior to legalization. All traffic deaths increased 11% during the same time period.²²
- Washington drivers with active THC in their blood involved in fatal driving accidents increased 122.2% from 2010 to 2014.²³
- Approximately 20% of all traffic deaths in Colorado in 2014 were marijuana-related, compared to 10% before recreational marijuana legalization.²⁰

The Massachusetts Special Senate Committee on Marijuana

Following a fact-finding visit to Colorado, and a thorough review of lessons learned from other states that have legalized marijuana, noted the following concerns about legalizing recreational marijuana.

- Youth access, and youth perception that marijuana is safe, increases, even with strong safeguards in place.
- Edibles, which are the fastest growing segment of the marijuana market, are particularly challenging for public health and safety.
- The high potency of today's marijuana products increases the risk of harmful health consequences and addiction.
- The black market for marijuana is likely to continue after legalization.
- Tax revenues and fees may fall short of even covering the full public and social costs, including regulation, enforcement, public health and safety, and substance abuse treatment.

Select Resources

Massachusetts Medical Society

www.massmed.org/marijuana

Research, news, and the latest from the Massachusetts Medical Society on recreational marijuana and Question 4.

The Campaign for a Safe and Healthy Massachusetts

www.safeandhealthyma.com

A coalition of families, workers, businesses, health care and community leaders, anti-addiction advocates, educators, and first responders who are opposing the legalization of the commercial marijuana industry in Massachusetts.

Special Senate Committee Report on Marijuana

www.massmed.org/2016-Senate-Report-on-Marijuana

March 2016 report of marijuana policy implications and a review of experiences in other states where recreational marijuana is legal.

The Legalization of Marijuana in Colorado, the Impact, Volume 4, September 2016

<https://goo.gl/27pqqO>

The fourth annual report on the impact of legalized marijuana in Colorado.

Washington State Marijuana Impact Report, March 2016

www.riag.wa.gov/documents/NWHIDTAMarijuanaImpactReportVolume1.pdf

Colorado Department of Public Health and the Environment, Marijuana

- Information for the public
www.colorado.gov/marijuana
- Marijuana research page
www.colorado.gov/pacific/cdphe/marijuana-research

University of Washington, Learn about Marijuana, Science-based information for the public

<http://learnaboutmarijuanawa.org/>

Fact sheets, including on marijuana potency, abuse, edibles, vaping, and interactions with other medications, and about specific populations, including youth, older adults, pregnant women

Substance Abuse and Mental Health Services Administration (SAMHSA) Marijuana information

www.samhsa.gov/atod/marijuana

Data and statistics, laws and policies about marijuana, and resources to prevent youth marijuana use.

Endnotes

- ¹ Niesink RJ, et al. Does cannabidiol protect against adverse psychological effects of THC? *Frontiers in Psychiatry*. 2013; Volume 4 Article 130:1–8.
- ² Hall W, et al. Adverse health effects of non-medical cannabis use. *Lancet*. 2009 Oct 17;374(9698):1383–91.
- ³ Devinsky O, et al. Cannabidiol: Pharmacology and potential therapeutic role in epilepsy and other neuropsychiatric disorders. *Epilepsia*. 2014:1–12.
- ⁴ Burgdorf JR, Kilmer B, Pacula RL. Heterogeneity in the composition of marijuana seized in California. *Drug Alcohol Depend*. 2011;117:59–61.
- ⁵ ElSohly et al., 2016. Changes in cannabis potency over the last 2 decades (1995–2014): Analysis of current data in the United States [Table]. *Biological Psychiatry*, 79;618:613–619.
- ⁶ Volkow ND, et al. Adverse effects of marijuana use. *N Engl J Med*. 370;23:2219–27.
- ⁷ Hall W, et al. Adverse health effects of non-medical cannabis use. *Lancet*. 2009 Oct 17;374(9698):1383–91.
- ⁸ Volkow ND, et al. Adverse effects of marijuana use. *N Engl J Med*. 2014 370;23:2219–27.
- ⁹ Pardini D, et al. Unfazed or dazed and confused: Does early adolescent marijuana use cause sustained impairments in attention and academic functioning? *J Abnorm Child Psychol*. 2015 43:1203–1217.
- ¹⁰ Hall W, et al. Adverse health effects of non-medical cannabis use. *Lancet*. 2009;374:1383–91.
- ¹¹ Stiby AI, et al. Adolescent cannabis and tobacco use and educational outcomes at age 16: birth cohort study. *Addiction*. 2015;110:658–668.
- ¹² Auer R, et al. Association between lifetime marijuana use and cognitive function in middle age: the coronary artery risk development in young adults (CARDIA) Study. *JAMA Internal Medicine* online. 2016 February 1.
- ¹³ Battistella G, et al. Long-term effects of cannabis on brain structure. *Neuropsychopharmacology*. 2014; 39:2041–2048.
- ¹⁴ Asbridge M, et al. Acute cannabis consumption and motor vehicle collision risk: systematic review of observational studies and meta-analysis. *BMJ*. 2012;344:e536.
- ¹⁵ Romano E, et al. Drugs and alcohol: their relative crash risk. *Journal of Studies on Alcohol and Drugs*. 2014 Jan:56–64.
- ¹⁶ El Marroun H, et al. Intrauterine cannabis exposure affects fetal growth trajectories: the Generation R study. *J Am Acad Child Adolesc Psychiatry*. 2009 Dec;48(12):1173–81.
- ¹⁷ Saurel-Cubizolles MJ, et al. Cannabis use during pregnancy in France in 2010. *BJOG*. 2014 Jul;121(8):971–7.
- ¹⁸ Wang G., et al. Unintentional pediatric exposures to marijuana in Colorado, 2009–2015 *J Pediatr*. Published online July 25, 2016.
- ¹⁹ Rocky Mountain High Intensity Drug Trafficking Area (RMHIDTA) Investigative Support Center, “The Legalization of Marijuana in Colorado: The Impact.” 2015 September; Volume 3.
- ²⁰ Rocky Mountain High Intensity Drug Trafficking Area (RMHIDTA) Investigative Support Center, “The Legalization of Marijuana in Colorado: The Impact.” 2016 September; Volume 4.
- ²¹ Rocky Mountain High Intensity Drug Trafficking Area (RMHIDTA) Investigative Support Center, “The Legalization of Marijuana in Colorado: The Impact.” 2014 August; Volume 2.
- ²² Rocky Mountain High Intensity Drug Trafficking Area (RMHIDTA) Investigative Support Center, “The Legalization of Marijuana in Colorado: The Impact.” 2016 September; Volume 4.
- ²³ Washington Traffic Safety Commission, “Driver Toxicology Testing and the Involvement of Marijuana in Fatal Crashes, 2010–2014.” 2016 February.

Acknowledgement

Thanks to Alan Ehrlich, MD, Assistant Professor of Family Medicine, University of Massachusetts Medical School for his assistance gathering research on how marijuana affects health.

Who else is opposing the ballot question to legalize recreational marijuana?

The Campaign for a Safe and Healthy Massachusetts

Massachusetts Medical Society	Governor Charlie Baker (R)
Massachusetts Hospital Association	Boston Mayor Marty Walsh (D)
Associated Industries of Massachusetts	Attorney General Maura Healey (D)
Massachusetts Municipal Association	House Speaker Robert DeLeo (D)
Retailers Association of Massachusetts	A bipartisan coalition of 120 legislators from across Massachusetts
Association of School Superintendents	Massachusetts Chiefs of Police
Association for Behavioral Healthcare	Massachusetts Sheriffs Association
National Alliance on Mental Illness (Massachusetts Chapter)	All Massachusetts District Attorneys
Action for Boston Community Development (ABCD)	
The Health Foundation of Central Mass.	

These Massachusetts physician groups also oppose Question 4

Massachusetts Chapter, American Academy of Pediatrics	Massachusetts Psychiatric Society
Massachusetts Chapter, American College of Physicians	Massachusetts Gastroenterology Association
Massachusetts Academy of Family Physicians	Massachusetts Society of Neurosurgeons
Massachusetts Section, American College of Obstetricians and Gynecologists	Massachusetts Association of Practicing Urologists

For the latest news and updates on the ballot question, recreational marijuana, links to reports and research, educational materials for patients, and other groups opposing Question 4, visit www.massmed.org/marijuana.



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