

TO: Honorable Members of the 2016 Interim Study Committee on Cost-benefit Analysis of Legalized Marijuana in Colorado

FROM: Amanda Bent, Policy Coordinator, Drug Policy Alliance

DATE: September 21, 2016

RE Support for Interim Committee Bill 8 (Allowing Medical Marijuana use for Stress Disorders)

Drug Policy Alliance strongly supports Bill 8 and urges you to vote yes on this important legislation.

There is a growing recognition that patients with Post Traumatic Stress Disorder (PTSD) can benefit from medical marijuana. This bill would give patients in Colorado that option.

Eighteen other states and the District of Columbia now allow access to medical marijuana for PTSD. The most recent to join this list was New Jersey, which has what is widely regarded as the strictest medical marijuana program in the country and where the governor is a very vocal marijuana critic. This tells us that providing this option to vulnerable patients including veterans is uncontroversial. These patients deserve to make the decision with their doctor about how to best treat their symptoms.

A growing body of research finds medical marijuana effective for alleviating the symptoms of PTSD.

- An Israeli pilot study found that within two months of administering medical marijuana, the **severity of participants' PTSD symptoms and emotional distress were reduced by approximately half**. Additionally, participants reported an improvement in work and social functioning as well as increase in their overall psychological state, with effects seen up to one year post-treatment.¹
- Several studies²—including a randomized controlled trial³, and an intensive case study⁴—found that **marijuana reduced the intensity of pain, improved sleep, and was tolerated among participants**.

¹ Abrams, D. I. (2010). Cannabis in pain and palliative care. *PAIN*, 20(4), 35; Carter, G. T., Flanagan, A. M., Earleywine, M., Abrams, D. I., Aggarwal, S. K., & Grinspoon, L. (2011). Cannabis in palliative medicine: improving care and reducing opioid-related morbidity. *American Journal of Hospice and Palliative Medicine*, 1049909111402318; Roitman, P., Mechoulam, R., Cooper-Kazaz, R., & Shalev, A. (2014). Preliminary, open-label, pilot study of add-on oral Δ^9 -tetrahydrocannabinol in chronic post-traumatic stress disorder. *Clinical drug investigation*, 34(8), 587-591; Neumeister, A., Normandin, M. D., Pietrzak, R. H., Piomelli, D., Zheng, M. Q., Gujarró-Anton, A., ... & Huang, Y. (2013). Elevated brain cannabinoid CB1 receptor availability in post-traumatic stress disorder: a positron emission tomography study. *Molecular psychiatry*, 18(9), 1034-1040; Fraser, G. A. (2009). The use of a synthetic cannabinoid in the management of Treatment-Resistant nightmares in posttraumatic stress disorder (PTSD). *CNS neuroscience & therapeutics*, 15(1), 84-88; Betthausen, K., Pilz, J., & Vollmer, L. E. (2015). Use and effects of cannabinoids in military veterans with posttraumatic stress disorder. *American Journal of Health-System Pharmacy*, 72(15).

² Ware, M. A., Wang, T., Shapiro, S., Robinson, A., Ducruet, T., Huynh, T., ... & Collet, J. P. (2010). Smoked cannabis for chronic neuropathic pain: a randomized controlled trial. *Canadian Medical Association Journal*, 182(14), E694-E701.

- Finally, another study conducted in 2014 in New Mexico, the first state to allow the use of medical marijuana for PTSD, also found **signs of PTSD symptom reduction**.⁵
- Additionally, **medical marijuana has also been found to have positive effects on emotional processing and fear extinction**.⁶ Specifically, medical marijuana plays an important role in the extinction learning of aversive memories, a neural process with central relevance to PTSD.⁷

Medical marijuana also has potential as a **harm reduction tool in preventing dependence, toxicity and overdose with other medications**.

- Currently the U.S. FDA has approved two anti-depressants for the treatment of PTSD, namely Zoloft and Paxil, both of which have **limited efficacy** and produce remission in only about one-quarter of patients. Such medications have also been found to **double the risk of suicidal thinking and suicidal attempts in patients 24 years or less, which includes a large percentage of our returning veterans**. Additionally, both of these medications are antidepressants, which have been widely reported to have **detrimental side effects like nausea, sexual problems, worsening depression, suicidal thinking or behavior, and withdrawal from normal social situations**. Doctors may also prescribe other types of medications, like benzodiazepines, antipsychotics and other antidepressants like Prozac, which have undesirable side effects.⁸ Among veterans with PTSD, as diagnosed by the Department of Veterans Affairs, 89% are treated with the above-listed medications.⁹ **Medical cannabis, which has shown promise in alleviating PTSD, could be used to replace some of these pharmaceutical drugs, allowing those with PTSD to reduce or eliminate harmful side effects.**

³ Passie, T., Emrich, H. M., Karst, M., Brandt, S. D., & Halpern, J. H. (2012). Mitigation of post-traumatic stress symptoms by Cannabis resin: A review of the clinical and neurobiological evidence. *Drug testing and analysis*, 4(7-8), 649-659.

⁴ Greer, G. R., Grob, C. S., & Halberstadt, A. L. (2014). PTSD symptom reports of patients evaluated for the New Mexico Medical Cannabis Program. *Journal of psychoactive drugs*, 46(1), 73-77.

⁵ Fusar-Poli, P., Crippa, J. A., Bhattacharyya, S., Borgwardt, S. J., Allen, P., Martin-Santos, R., ... & McGuire, P. K. (2009). Distinct effects of Δ 9-tetrahydrocannabinol and cannabidiol on neural activation during emotional processing. *Archives of General Psychiatry*, 66(1), 95-105; Chhatwal, J. P., Gutman, A. R., Maguschak, K. A., Bowser, M. E., Yang, Y., Davis, M., & Ressler, K. J. (2009). Functional interactions between endocannabinoid and CCK neurotransmitter systems may be critical for extinction learning. *Neuropsychopharmacology*, 34(2), 509-521.

⁶ Roitman, P., Mechoulam, R., Cooper-Kazaz, R., & Shalev, A. (2014). Preliminary, open-label, pilot study of add-on oral Δ 9- tetrahydrocannabinol in chronic post-traumatic stress disorder. *Clinical drug investigation*, 34(8), 587-591; Marsicano, G., Wotjak, C. T., Azad, S. C., Bisogno, T., Rammes, G., Cascio, M. G., ... & Lutz, B. (2002). The endogenous cannabinoid system controls extinction of aversive memories. *Nature*, 418(6897), 530-534; Rabinak, C. A., Angstadt, M., Sripada, C. S., Abelson, J. L., Liberzon, I., Milad, M. R., & Phan, K. L. (2013). Cannabinoid facilitation of fear extinction memory recall in humans. *Neuropharmacology*, 64, 396-402.

⁷ Medical Cannabis Resource Center. (2015). Information on PTSD. Available at http://mercycenters.org/library/i_PTSD.html. Accessed 10/16/15.

⁸ Alexander, W. (2012). Pharmacotherapy for post-traumatic stress disorder in combat veterans: focus on antidepressants and atypical antipsychotic agents. *Pharmacy and Therapeutics*, 37(1), 32.

⁹ Seal, K. H., Shi, Y., Cohen, G., Cohen, B. E., Maguen, S., Krebs, E. E., & Neylan, T. C. (2012). Association of mental health disorders with prescription opioids and high-risk opioid use in US veterans of Iraq and Afghanistan. *JAMA*, 307(9), 940-947. xiii

- Furthermore, **off-label use of opioids is widespread among veterans diagnosed with PTSD, and use of these drugs can have significantly and potentially life threatening side effects.**¹⁰ Several studies indicate that medical marijuana can complement or substitute opioid medicine. Used in combination with or instead of opioids, the addition of cannabis often allows the patient to decrease the dosage of opioid medication required to relieve pain, thereby decreasing the potential for opioid overdose and cross prescription complications.¹¹ Moreover, research published in the journal of JAMA Internal Medicine found that opiate-related deaths fell by a third on average in 13 states after they legalized medical marijuana in the six years after the states' medical marijuana laws took effect.¹²
- An American Journal of Public Health article¹³ published this month also suggests that **medical marijuana access reduces opioid use and associated adverse outcomes.** Those who can more effectively manage their PTSD symptoms without the use of opioids and other more dangerous medications should have the opportunity to do so. Their use of marijuana should be recognized as therapeutic and they should be granted the legitimacy afforded to other patients under Colorado's medical marijuana program.

Thank you for your time and consideration.

¹⁰ Lucas, P. (2012). Cannabis as an adjunct to or substitute for opiates in the treatment of chronic pain. *Journal of psychoactive drugs*, 44(2), 125-133; Abrams, D. I., Couey, P., Shade, S. B., Kelly, M. E., & Benowitz, N. L. (2011). Cannabinoid-opioid interaction in chronic pain. *Clinical Pharmacology & Therapeutics*, 90(6), 844-851; Perron, B. E., Bohnert, K., Perone, A. K., Bonn-Miller, M. O., & Ilgen, M. (2015). Use of Prescription Pain Medications Among Medical Cannabis Patients: Comparisons of Pain Levels, Functioning, and Patterns of Alcohol and Other Drug Use. *Journal of studies on alcohol and drugs*, 76(3), 406-413. Bachhuber, M. A., Saloner, B., Cunningham, C. O., & Barry, C. L. (2014). Medical cannabis laws and opioid analgesic overdose mortality in the United States, 1999-2010. *JAMA internal medicine*, 174(10), 1668-1673.

¹¹ Bachhuber, M. A., Saloner, B., Cunningham, C. O., & Barry, C. L. (2014). Medical cannabis laws and opioid analgesic overdose mortality in the United States, 1999-2010. *JAMA internal medicine*, 174(10), 1668-1673.

¹² Hargarten J., Burnson F., Campo B. and Cook C. (2013). Veteran Suicides Twice as High as Civilian Rates. *News21.com*. Retrieved from <http://backhome.news21.com/article/suicide/>

¹³ Kim, J. H. et al. (2016). State medical marijuana laws and the prevalence of opioids detected among fatally injured drivers. *American Journal of Public Health*, e1-16, doi: 10.2105/AJPH.2016.303426