

House Bill 18-1263***Medical Marijuana Use for Autism and Acute Pain*****An Economic Analysis****April 5, 2018**

House Bill 18-1263 expands the list of qualifying conditions for medical marijuana (cannabis) to include the treatment of autism spectrum disorders and acute pain. This bill gives patients another way to counteract the complications of autism spectrum disorders or an additional option for treating acute pain. Considering there is little scientific evidence for both beneficial and adverse effects of cannabis use and lax regulations for medical cannabis cards, the legislature would do well to add further amendments to make medical cannabis prescription available only to those with no other options for treatment.

Medical cannabis regulations require attention to minimize healthcare costs to society. Patients resistant to available treatments for autism disorders, or acute pain, incur healthcare costs as the system may continue financing ineffective treatments. Patients foregoing treatment may develop further health complications that incur further costs, burdening the rest of society. Passing HB 18-1263 enables medical cannabis as an additional therapy for autism spectrum complications, or acute pain, which may save the healthcare system from continually financing ineffective treatments on resistant patients.

Colorado currently qualifies medical cannabis for a narrow list of conditions: cachexia, cancer, chronic pain, chronic nervous system disorders, glaucoma, HIV/AIDS, nausea, persistent muscle spasms, post-traumatic stress syndrome, and seizures (NORML, 2018). Though cannabis use is not scientifically supported for many of these conditions, scientists are steadily uncovering its medicinal benefits. As of 2015, the Institute of

Medicine acknowledged treatment potential for THC, a cannabis chemical, in pain relief, nausea, vomit control, and appetite stimulation (“State Medical Marijuana Laws,” n.d.).

Even without scientific support, cannabis has historical use in treating many conditions including pain, tumors, and inflammation (Becket, 2017). While this variety suggests therapeutic potential for other conditions, there remains a lack of scientific support. As with all treatments unsupported by research, the assembly needs to cautiously consider permitting medical cannabis treatment for autism complications and acute pain.

Recreational cannabis usually has higher THC concentrations while medical cannabis typically has higher CDB concentrations. While there are many more cannabis chemicals that confer physiological effects, THC and CDB are the best studied. Both THC and CDB, found in all cannabis strains, confer therapeutic properties, but only THC confers a psychedelic high (Becket, 2017; Ryback, 2015). Different strains of medical cannabis, with differing CDB and THC levels, treat specific medical conditions (“What Is the Difference Between Different Types of Cannabis?,” 2017). Though medical cannabis is the most potent, patients may use stronger recreational strains for treatment (Fuego, 2018).

Colorado allows consumers over age 21 to purchase recreational cannabis. Those under 21 must have a medical cannabis card for access – this card is required, and is only permitted, for the purchase of medical cannabis. Dispensaries selling medical or recreational cannabis are required to have a medical or recreational license respectively. It is possible to have both licenses. Medical cannabis incurs a lower tax rate than recreational cannabis and receives no subsidies or insurance coverages (“Marijuana Tax Data | Department of Revenue,” n.d.; Barrons, 2018;). Medical cannabis may not have cheaper prices as pricing is determined by the competitive market.

As individuals over 21 can legally access recreational cannabis for treatment, HB 18-1263 only has significant impact on cannabis access for patients under 21 who require a medical cannabis card for access.

Medical cannabis cards are approved under two criteria: the patient has a condition qualified for medical cannabis and the physician deems benefit from cannabis use (Department of Public Health, 2015). The physician is not required to follow any formal procedure indicating cannabis use as a last-resort. Patients who are under 21 with conditions that do not qualify have no access to medical cannabis.

As cannabis research is inconclusive with regards to autism and acute pain, the assembly needs to weigh out the potential benefits with the risks of passing HB 18-1263.

With a lack of other treatment options, some are calling for autism spectrum complications to warrant cannabis use (“Can Hemp Oil Reduce Seizures Related to Autism?,” 2012). However, no clinical studies explicitly assess cannabis’s ability to treat these complications. At best, a 2017 study shows CBD reducing seizures and improving social ability in mice with autistic-like social deficits (Kaplan, Stella, Catterall, & Westenbroek, 2017). Although this result is promising, successful treatment in mice does not equate to successful human clinical treatment.

The motivation to list acute pain as a qualification for medical cannabis might be influenced by cannabis’s efficacy in treating chronic pain. However, acute pain requires a more immediate drug response which has not been observed in CBD studies. This is backed by Hill *et al.*’s 2017 clinical review assessing how the active components of cannabis affect the pain response (Hill, Palastro, Johnson, & Ditre, 2017).

Clinical cannabis studies are necessary to assess cannabis's potential to treat autism spectrum complications and acute pain, among other conditions. However, federal regulations make it difficult for scientists to perform cannabis research.

Since 1970, cannabis has been classified as a Schedule 1 drug, labelling the substance with having high abuse potential, no medicinal value, and significant safety concerns (Ferro, 2013). This criminalization of cannabis makes it difficult for scientists to design clinical studies to research the health impacts of cannabis use.

The federal government will not decriminalize cannabis without sufficient evidence of its benefits. Yet, it is difficult for scientists to receive support and approval for such studies. A barrier to cannabis research is the acquisition of research-grade cannabis from the National Institute on Drug Abuse (NIDA) (Barnett, 2017). This standardized strain of cannabis is only available through NIDA and is required by the FDA for all U.S. cannabis studies (FDA, 2017). As NIDA's mission is to expose the harms of drugs to prevent their use, there is less support for medical research on cannabis (Ferro, 2013).

Cannabis research by scientists abroad is also curbed by cannabis's illegal status in other countries ("Weed around the world," 2017). Therefore, research on medical cannabis is scarce within the global scientific community (Hill et al., 2017).

A national survey of physicians finds ambivalent attitudes toward full-scale legalization of medical cannabis, and physicians are generally less approving of cannabis use than the general public (Kansas City Medical Society, 2016). With differing attitudes towards cannabis by the medical community, physician Dr. Coury states that medical cannabis should only be prescribed to patients with no other treatment options ("Can Hemp Oil Reduce Seizures Related to Autism?," 2012).

Coury's caution is not unfounded. Those who tried cannabis before age 15 were four times more likely to suffer from a cannabis use disorder than those who started at age 18 ("Statistics on Drug Addiction," n.d.). Of college the students admitted to public substance abuse programs in 2010, 72% were admitted for alcohol use disorders, 55.7% were admitted for cannabis use disorders, and 31.6% were admitted for prescription drug use disorders ("Statistics on Drug Addiction," n.d.). Volkow's study states that adolescent cannabis users develop fewer neural connections in adulthood. The study also associates cannabis with impaired driving accidents. Also, the delivery method of THC, oftentimes cannabis smoking, is known to transport other toxic substances into the body (Volkow, Baler, Compton, & Weiss, 2014).

If cannabis is misused by the medical community, then adverse patient responses may contribute costs to the healthcare system. However, it is important to give patients the opportunity to access medications if there is a possibility of therapeutic potential. Passing HB 18-1263 gives patients with autism spectrum complications, or acute pain, a last-resort treatment. Making medical cannabis an option has potential to act in the public interest.

Given the known adverse effects of cannabis, as well as potential unknowns, the assembly needs to amend current medical cannabis laws to only permit cannabis prescription if the patient fails all other treatments. By making medical cannabis a last-resort treatment, the state can minimize unnecessary medical cannabis use and decrease the prevalence of cannabis's adverse effects in society. With amendments, HB 18-1263 will expand qualifying conditions for medical cannabis, giving treatment-resilient patient populations a chance at a potentially effective treatment.

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