

# Ethical Implications for Providers Regarding Cannabis Use in Children With Autism Spectrum Disorders

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Children with autism spectrum disorder (ASD) are at risk for self-injurious behaviors that can be difficult to treat in the context of co-occurring low IQ and adaptive skills. Increased prevalence and decriminalization of cannabis in some states have led to more frequent questions for pediatricians about the use of cannabis for difficult-to-treat developmental and behavioral conditions. What do we know about the possible benefits and risks of cannabis use in children with ASD? How should the clinician respond to a parent who expresses interest in cannabis to manage behavior in a child with ASD? Ethical analysis that includes harm reduction, health concerns, and information sharing will be discussed. We present commentary on the ethical implications of cannabis use in children with ASD and severe self-harm behaviors.

In Oregon, medical cannabis has been legalized since November 1998, and recreational cannabis has been legalized since July 2015. Ubiquity has led to questions about the safety and efficacy of use in pediatric patients, particularly those with difficult-to-treat developmental and behavioral conditions. What do we know about the possible benefits and risks of cannabis use in children with autism spectrum disorder (ASD)? How should the clinician respond to a parent who reports interest in cannabis to manage behavior? In this Ethics Rounds, we present the case of a child with ASD and severe self-harm behaviors whose parent is administering cannabis, and we seek expert commentary on the ethical considerations.

## THE CASE

A 4-year-old child was referred by his pediatrician to a multidisciplinary ASD clinic for diagnostic confirmation of ASD in the context of hypotonic cerebral palsy and visual impairment.

He had recently begun to ambulate, but he was nonverbal and engaged in severe self-harm behaviors that included head banging. Child protective services had been involved because of observed bruising on the head. The home was judged to be safe and he now wears a protective helmet and arm splints to prevent injury. A trial of risperidone (titrated to 0.5 mg per day) had been prescribed by his pediatrician but was discontinued after a few months because of a lack of benefit and significant side effects that included sedation and decreased responsiveness. Valproate (dosage unknown) was also briefly attempted but discontinued because of severe diarrhea. The family has since been reluctant to pursue medication because of concerns about side effects. The boy received early intervention services (1 hour per week of in-home services) from 18 months to 3 years of age, at which point it was determined that he met educational eligibility for ASD. He has participated in intensive applied behavioral analysis (ABA) for

## abstract

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20 hours per week for the last year in addition to weekly speech and language, occupational, and physical therapy.

A full-team evaluation found him to be functioning at an age equivalency of 8 months and gave him diagnoses of ASD (level 3, requiring substantial support) and global developmental delay. When asked about other medications and supplements, his mother responded that she had been giving her son an “herbal supplement” provided to her by a friend whose son also has ASD. She added that it was effective in reducing her son’s self-harm behaviors. He was calmer and more relaxed after receiving his “daily drop.” She had been able to remove his helmet and wash his hair for the first time in months. The mother’s friend recently told her that she made the supplement by distilling cannabis leaves that are known to have low psychogenic properties. After receiving this information 1 week ago, the patient’s mother discontinued the supplement. Since that time, she has observed an alarming resurgence in her son’s self-harm behaviors. She asked the team for a recommendation about resuming the supplement.

**DRS SUSANNE W. DUVALL, PHD, OLIVIA LINDLY, PHD, MPH, KATHARINE ZUCKERMAN, MD, MPH, AND MELISSA WEDDLE, MD, MPH, COMMENT**

Children with ASD experience difficulties with inflexibility, patterns of restricted and repetitive interests and behaviors, and social communication deficits.<sup>1</sup> ASD is estimated to occur in ~1 in 68 individuals, with behavioral difficulties (including self-harm behaviors) being common (30%–50%) and having a significant impact on morbidity. These are more likely to occur in the context of limited communication skills, low IQ, or low adaptive scores.<sup>2–4</sup>

Conventional behavioral treatments of ASD are difficult to access for many families,<sup>5,6</sup> and most families receive less therapy than is recommended in expert guidelines because of a variety of barriers.<sup>7,8</sup> Barriers to conventional treatment include a paucity of providers, the intensive nature of treatment, poor family knowledge about empirically supported treatments, high costs, and variable insurance coverage, among others.<sup>9–11</sup> Even when parents use recommended, evidence-based therapies, such as early intensive behavioral interventions, outcomes are variable<sup>7</sup> and positive results are less likely for children with more severe presentations.<sup>12,13</sup> Psychoactive medications prescribed to treat behavioral symptoms associated with ASD (eg, self-injurious behavior) or common ASD comorbidities (eg, sleep disturbance) include antidepressants, stimulants, and antipsychotics.<sup>14,15</sup> These medications can have troublesome side effects, such as tics or weight gain. They may be associated with severe adverse reactions, such as neuroleptic malignant syndrome, with resultant hesitancy to use the medications in both parents and clinicians.

Many families seek alternative or complementary treatment approaches. Complementary health approaches (CHAs) encompass an array of modalities developed outside of or parallel to mainstream medicine, with varying levels of evidence regarding efficacy and safety (eg, the potential for adverse drug interactions) for core or associated ASD symptoms.<sup>16,17</sup> Researchers at the National Center for Complementary and Integrative Health categorize CHAs as natural products (eg, specific vitamins and herbal supplements), mind and body practices (eg, yoga and qigong), or other approaches (eg, chelation therapy).<sup>16</sup> Increasingly in recent

years, cannabis has been considered a CHA.<sup>16</sup>

The use of CHAs is prevalent, especially in individuals with ASD. Recent studies suggest 17%<sup>18</sup> to 28%<sup>19</sup> of children with ASD use a CHA.<sup>20–22</sup> A family’s decision to use a CHA for a child with ASD is often multifactorial.<sup>23</sup> Younger age,<sup>24</sup> greater medical complexity,<sup>18,21,25</sup> a higher parental education level,<sup>18,22,26</sup> and a greater rate of conventional care use<sup>22,24</sup> may contribute to the use of a CHA for ASD as well as concerns about the safety of prescription medication.<sup>25–27</sup> This case suggests a potential ethical conflict between parental choice and the child’s well-being. As with any situation or therapy, benefits should be weighed against negative impacts. When a parent asks about CHAs, the clinician should use that opportunity to first reassess the child’s entire current service-use profile, which is particularly important because families of children with ASD have high rates of unmet service needs.<sup>10</sup> Clinicians could ask questions such as, “Tell me more about all of the services that your child is using for his or her autism spectrum disorder” and “Which treatments seem to be working or not working for you?” The financial costs associated with CHAs for ASD should be assessed because usually these costs are out of pocket.<sup>11</sup>

It could be argued that pediatricians complete similar ethical exercises in their daily practices when they offer recommendations to families regarding standard medications and general advice (eg, football participation and medication for attention-deficit/hyperactivity disorder). Additionally, it is commonly considered to be appropriate at times for pediatricians to prescribe medications (especially off-label medicines) with less-than-ideal information about potential risks. Similarly, for cannabis (and many other CHAs), there is

insufficient evidence to clearly delineate benefits and risks. In these situations, the clinician must consider the standard of care, if it exists, and fully review the available evidence of harm and benefits before offering recommendations. Recent surveys report that family physicians in Colorado generally lack confidence in their knowledge and competence in the use of medical cannabis.<sup>27</sup>

The American Academy of Pediatrics (AAP) clinical practice guideline on CHA suggests that pediatric clinicians should monitor (versus discourage) the use of CHAs of questionable effectiveness and discourage the use of treatments with clear health risks (eg, chelation and hyperbaric oxygen therapy).<sup>17,28</sup> The AAP opposes medical cannabis for children but recognizes that cannabis may be an option for “children with life-limiting or severely debilitating conditions and for whom current therapies are inadequate.”<sup>29</sup> What is the evidence behind this stance, and how does it apply to this patient?

The parent gave her child a type of cannabis with low psychogenic properties, most likely cannabidiol (CBD). Of the >80 cannabinoid chemicals found in the cannabis plant,  $\delta$ -9-tetrahydrocannabinol (THC) and CBD have been the most studied. THC is responsible for euphoria or intoxication through its activation of the cannabinoid type 1 receptors found on neurons and glial cells in various parts of the brain. THC also interacts with the cannabinoid type 2 receptors, which are found mainly in the immune system.<sup>30,31</sup> CBD has a low affinity for the endocannabinoid receptors and does not have psychoactive properties. CBD alters neuronal excitability by other means and may have antioxidant and anti-inflammatory properties.<sup>32</sup>

Evidence supports therapeutic effects of CBD for the treatment of adults with spasticity,<sup>33</sup> central pain,<sup>34</sup> and social anxiety.<sup>35</sup> A prospective

double-blinded multicenter study found that CBD reduced convulsive seizure frequency in children with Dravet syndrome.<sup>36</sup> Another controlled double-blind trial showed a reduction in frequency of drop seizures in patients with Lennox-Gastaut syndrome.<sup>37</sup>

We know less about the potential benefits of CBD use in children with ASD. Families may encounter information about potential benefits from online advocacy groups, such as Mothers Advocating Medical Marijuana for Autism,<sup>38</sup> the Autism Support Network,<sup>39</sup> and Pediatric Cannabis Therapy,<sup>40</sup> whose members share personal stories of marked behavioral improvement in children who are treated with CBD. A preliminary study in Israel showed a decrease in disruptive behaviors and improved anxiety and communication problems in children with ASD.<sup>41</sup> A double-blind placebo-controlled crossover trial is ongoing.<sup>42</sup>

What do we know about the safety and side effects of cannabis exposure in children? Most of the studies that address adverse effects consider chronic, recreational cannabis use, presumably of THC-dominant strains. Regular cannabis use in adolescents is associated with short-term decreases in working memory, IQ, executive function, sustained attention, and motor coordination, with long-term effects of altered brain development, addiction, poor educational outcomes, diminished life achievements, and increased risks of chronic psychosis disorder.<sup>43–45</sup> It is unclear how, or even if, these findings can be applied to the child in our case. A review of CBD usage specifically<sup>46</sup> concludes that CBD is well tolerated in humans, although none of the cited studies included children or adolescents. The previously cited study of CBD treatment of refractory seizures in children and young adults with Dravet syndrome revealed adverse

effects that included somnolence, loss of appetite, and diarrhea.<sup>36</sup>

Cannabis availability is increasing in the United States, with medical marijuana now legal in 33 states and the District of Columbia,<sup>47</sup> and recreational marijuana being legal in 10 states and the District of Columbia.<sup>48</sup> In Oregon, where this patient lives, recreational use for minors (age <21 years) is currently illegal; however, Oregon has no lower age limit for medical cannabis use. Certain criteria must be met for marijuana to be prescribed, including the presence of a debilitating medical condition, a designated caregiver to provide supervision, and an attending physician’s statement that verifies the diagnosis and certifies that the use of cannabis may mitigate the symptoms.<sup>49</sup>

In the United States, clinicians have a limited ability to interfere with parental decision-making; clinicians respect the authority of parents to decide for their children unless a decision poses an unacceptably high or immediate risk.<sup>50</sup> If evidence is insufficient to point to clear benefits or harm, the clinician should engage in a shared decision-making approach that integrates the family’s perspective. Because evidence points to negative THC effects on developing brains, it is prudent to advise against or to recommend caution when giving THC-containing preparations to children. Evidence is insufficient to support the efficacy or adverse effects of CBD in children with ASD. The clinician should communicate with parents about what is known and unknown about the effects of cannabis on children, including both THC and CBD.

Given that this child has tried conventional ASD therapies, including prescribed medications and intensive ABA without significant improvement, and that CBD use has been associated with reduced self-harm, it would be ethically inappropriate for the clinician to

advise against its use. In this case, the potential benefits must be weighed against the unknown but possible risks. Cannabis may be an option for this child, who has a severely debilitating condition and for whom current conventional therapies have been inadequate, as is delineated in the AAP Policy Statement.<sup>29</sup>

The clinician must consider the family's perspective in discussions of the possible risks and benefits of this (and any) treatment. For example, even evidence-based treatments (such as ABA therapies) are intensive, time consuming, and exhausting for some caregivers with commensurate risks of emotional and financial stress. Another consideration for this child is that the homemade preparation may contain other ingredients with potential risks. In accordance with the AAP clinical practice guideline on CHAs, continued monitoring is recommended, and the parents and the primary clinician should enter into an agreement to monitor efficacy and safety in a systematic way.<sup>28</sup> Caretakers should be provided with a poison center's number in the event of adverse effects, accidental ingestion, or overdose. Finally, when a child takes a cannabis product outside of state-sanctioned medical cannabis provisions, the family should be counseled about potential legal implications.

Reporting this case patient to child protective services is not warranted, and it would seriously jeopardize the parent-clinician relationship as well as increase the likelihood that the parent will withhold important health information in the future.

#### **DR MICHAEL E. MSALL, MD, COMMENTS**

Families who have children with complex disabilities need comprehensive networks of support.<sup>51</sup> As their doctor, it is crucial to understand a family's supports,

the quality and comprehensiveness of these supports, the gaps in meeting the child's and family's needs, and the impact of these gaps on family life.<sup>52</sup>

Until recently, children who were nonverbal with challenging behaviors were presumed to be severely intellectually disabled. If, in addition, they had been late walkers, as this child was, they would often be diagnosed with cerebral palsy. Many medical professionals, including neurologists, psychiatrists, and pediatricians, too often assumed that no habilitative or behavioral management strategies would be helpful. As recently as the 1980s, many individuals with such intellectual disabilities and challenging behaviors were sent to residential facilities where the quality of medical care, supervision, and behavior supports was limited.<sup>53</sup> As a result, children were often out of control with challenging behaviors, and physical and chemical constraints were liberally applied. It was not unusual for these individuals to receive high doses of first-generation antipsychotics, such as chlorpromazine. Little attention was paid to functional analyses of behavior or the medical contributors to behavior.<sup>54</sup>

Many different medical conditions are associated with self-injurious behavior; the differential includes basic medical problems, such as eye and ear pain, sinusitis, otitis, dental caries, gastroesophageal reflux, constipation, sleep difficulties, mood disorders, and vision and hearing disorders.<sup>55</sup> These conditions are hard to discern when there are challenges in communication, gaps in reliable informants who really know the individual's behavior in positive and challenging settings, and failures to acknowledge the impact of providing positive attention to disruptive behaviors during crisis management and thereby reinforcing their persistence.

What are the general principles for approaching these challenges? The first step is to assess the antecedents to specific patterns of behavior so as to better understand their motivations and thereby specify what consequences might reduce the current challenges. This involves inquiry and observation of the circumstances in which the child does and does not engage in self-injurious behavior.<sup>56</sup>

An important part of this strategy is to simultaneously understand the tempo of the child's self-injurious behaviors. If head banging had started at 2 years of age and is predominantly serving as an attention-seeking behavior, then the task is to identify ways in which the child cannot head bang while carrying out the task. These situations include being on a swing, jumping on a trampoline, swimming, being on a padded mat, and being in a space with padded walls, such as a gym.

Another key issue is the analysis of where these behaviors do and do not occur to identify potential positive reinforcers. For example, if there is no head banging during the bus ride to school, then car rides are a positive reinforcer. At school, if there is no head banging during music time, music may be used as a positive reinforcer. If the child's favorite activity is to access a switch or iPad, then cause-and-effect educational toys are positive reinforcers.

The continued use of a structured intervention framework of ABA, in combination with the management of daily routines of feeding, dressing, toileting, and maintaining hygiene, would allow for a multifaceted strategy for combining positive reinforcers, rewards of attention, responses to positive communications, and an understanding of how this boy learns. This management plan would include a profile of how the child communicates and signals his likes

and dislikes, his favorite tasks (such as listening to music or squeezing an object), and methods to de-escalate disruptive behaviors. As noted earlier, many families face barriers to accessing ABA that include time, cost, and a limited availability of services.<sup>9–11</sup>

Given that there are behavioral interventions that are helpful but difficult to access, what are the options for health professionals? Most critically, health professionals must recognize that an intervention, such as a helmet, is not all that is needed for a child with ASD and intellectual disability, limited verbal communication, and severe self-injurious behavior. The most important need for families of children with ASD and intellectual disabilities is for effective management strategies that support the child's functioning and positive behaviors over the course of the day.<sup>57</sup> These include access to comprehensive behavior therapies and, if needed, judicious psychopharmacology. In examining pharmacological approaches to self-injurious behavior, naltrexone, traditional and atypical neuroleptics, anxiolytics, stimulants, anticonvulsants, and selective serotonin reuptake inhibitors have been tried. However, there is little evidence to support a magic psychopharmacological bullet.

Given the fragmented access to informed behavior interventions and prescribing clinicians who have expertise in preschool children with ASD and intellectual disability, it should not be surprising that parents try CHAs. When examining a CHA, it is critically important that health professionals do no harm. It is in this respect that CHA use in children who are vulnerable requires the utmost diligence.

The first question for this parent is to define exactly what the child is receiving. Specifically, how much THC or CBD is in the current product?

THC can cause sedation, lethargy, and cognitive blunting.<sup>58</sup> On the other hand, in select populations with refractory epilepsy, CBD can reduce the frequency of monthly seizures by approximately one-third,<sup>36</sup> although only 1 in 25 children with refractory seizures become seizure-free on these agents.<sup>59</sup>

Second, what do we know about the safety profiles of THC and CBD in children? There is a long history of nonregulated supplements with toxicity to children. In addition, they may be expensive and distract the family from educational and behavioral management strategies for improving outcomes over the long-term. Families should be informed of the lack of evidence regarding the benefits of cannabis in children with ASD and intellectual disability, attention-deficit/hyperactivity disorder, anxiety, and/or disruptive behaviors.

We need good studies of CBDs. In the previously cited AAP Policy Statement, changing marijuana from a Drug Enforcement Administration Schedule 1 substance to a Schedule 2 substance to facilitate research is recommended.<sup>29</sup>

Given all of the uncertainties about CBDs, I would recommend a medication for sedation and anxiety that has more evidence to support its use, such as a benzodiazepine. I would help the mother access appropriate supports across the home, school, and community. I would not report to child protective services.

#### ABBREVIATIONS

|      |                                |
|------|--------------------------------|
| AAP: | American Academy of Pediatrics |
| ABA: | applied behavioral analysis    |
| ASD: | autism spectrum disorder       |
| CBD: | cannabidiol                    |
| CHA: | complementary health approach  |
| THC: | δ-9-tetrahydrocannabinol       |

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