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Anticipated Medical Effects on Children From Legalization of Marijuana in Colorado and Washington State

A Poison Center Perspective

On November 4, 2012, Amendment 64 passed in Colorado and Initiative 502 passed in Washington State to legalize the possession of small amounts of marijuana and marijuana-related products by adults. Possession by anyone younger than 21 years and the growing of marijuana without authorization remain illegal in both states. In Colorado, adults are permitted to possess up to 1 oz of marijuana or 6 marijuana plants. In Washington, adults are permitted to possess up to 1 oz of marijuana, 16 oz of marijuana-infused product in solid form, 72 oz of marijuana-infused product in liquid form, or any combination of all 3. The possession of marijuana remains illegal under federal law and marijuana remains a Schedule 1 agent under the Drug Enforcement Administration.

The medical use of marijuana and marijuana-infused products is legal in 18 states and the District of Columbia. Seven additional states are considering legalization of medical marijuana. The medical use of marijuana has been legal in Colorado since 2009.

See related article and editorial

In this issue, Wang et al describe an increase in cases of accidental ingestion of marijuana by children after decriminalization of medical marijuana in Colorado. Marijuana ingested by the majority of the children described in the article was in the form of a food product. The medical marijuana industry provides attractive and palatable marijuana-infused solid and liquid products, including cookies, candies, brownies, and beverages. The legalization of recreational marijuana, especially the solid and liquid-infused forms permitted in Washington, will provide children greater access to cookies, candies, brownies, and beverages that contain marijuana.

Ingestion of marijuana results in the absorption of delta-9-tetrahydrocannabinol (THC) and stimulation of cannabinoid receptors in the central nervous system. This produces stimulation with hallucinations and illusions, followed by sedation. Toxic reactions are usually mild after acute accidental ingestion but can cause significant sedation in children. Respiratory insufficiency and the need for ventilatory support are described in the article. In older children, the stimulatory phase and hallucinations can produce anxiety and panic episodes when not anticipated in an accidental ingestion. The potency of marijuana in the United States has progressively increased over the past 40 years, with THC levels climbing from around 2% to nearly 8%. The risk of significant toxic reactions from exposures is more likely today than in the past.

Emergency medicine, pediatric emergency medicine, and primary care pediatric providers will be first to see patients accidentally exposed to marijuana. They may need additional training to recognize and manage significant marijuana toxic reactions. Signs and symptoms can include anxiety, hallucinations, panic episodes, dyspnea, chest pain, nausea, vomiting, dizziness, somnolence, central nervous system depression, respiratory depression, and coma. Similar signs and symptoms occur in a large variety of diseases and poisonings. The providers and staff should investigate the availability of marijuana in the child’s environment and use rapid tests to identify the metabolites of marijuana in the urine. No antidote exists for marijuana toxic reactions and supportive care should be provided, including control of anxiety, control of vomiting, airway control, and ventilation as needed. The regional Poison Center should be contacted to report the episode and obtain additional advice on evaluation and management.

Increased accidental exposure after increased availability of an agent is a consistent lesson in toxicology. Our current increase in laundry-pod ingestion in children is the result of increased availability coupled with attractive packaging. The ready availability of pain medications led to opioids surpassing motor vehicle crashes as the leading cause of accidental death in the United States. This profound poisoning problem went unrecognized for nearly a decade and has only recently come to the attention of health care providers and policy makers. A recent analysis of Poison Center data shows a parallel increase in severe poisonings, emergency department visits, and hospitalizations in children. A similar rise in marijuana exposure and toxic reactions is anticipated from the increased availability of marijuana in the child’s environment. Timely analysis of Poison Center data and emergency department records will provide an opportunity to quickly recognize and respond.
Intervention strategies in Washington State have begun to reduce the death rate from opioid exposure. These were modeled on successful interventions in poison prevention and include public education on the risks of opioid use, provider education on safe prescribing practices, prescription monitoring programs, and home naloxone hydrochloride programs.\textsuperscript{10,11} Similar approaches can be used to prevent marijuana exposure and toxic reactions:

- Changing societal norms through education of parents, children, and providers on the short-term and potential long-term effects of marijuana in children through advertising, television, movies, video games, and other media sources in homes, schools, hospitals, and provider offices.
- Increasing provider awareness through effective education (conferences and online programs).
- Encouraging just-in-time intervention with prompts and reminders in patient management and documentation software to encourage conversations about the use of marijuana in the home and the need to control access to marijuana products by children.
- Increasing consumer awareness and safety behaviors by posting warning signs at the site of sale and attaching warning labels on marijuana and marijuana-infused products on the risks of marijuana exposure and the need to keep such products out of easy reach of children.
- Control of access through the sale of marijuana-infused products (especially cookies, candy, brownies, and beverages) in child-resistant containers.

Methods to prevent accidental exposures to marijuana need to be studied for efficacy and progressively developed. Parents and providers should be encouraged to call the Poison Center for data collection, information, education, and management advice.

We expect the legalization of marijuana to increase accidental exposures to marijuana in children. We need real-time monitoring of exposures and toxic reactions, as well as tracking of the efficacy of intervention and prevention efforts. The Poison Center network in the United States provides real-time surveillance of emergent trends in exposure and poisoning.\textsuperscript{12} A national number is available to provide case management and prevention advice to parents, adolescents, providers, policy makers, and health care systems (1-800-222-1222). The lessons we learn will provide an opportunity for Washington, Colorado, and other states to adjust existing and future legislation, media, and clinical practice to limit marijuana exposure and toxic reactions in children.

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