

## Child Safety Link **Backgrounder** **Cannabis Legalization, Cannabis Edibles & Unintentional Poisonings in Young Children**

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### PURPOSE

*The intent of this paper is to provide an overview of the evidence regarding cannabis poisonings in young children and best practice prevention recommendations. It is not meant to be distributed to parents and caregivers.*

### INTRODUCTION

On October 17, 2018, non-medical cannabis will be legal in Canada and the legal sale of edibles is predicted to be one year following this (although the date is not yet confirmed). The IWK Child Safety Link and the IWK Regional Poison Centre have highlighted concerns regarding cannabis legalization specifically the potential increase in unintentional poisoning in young children. This paper provides an overview of poisonings among children in general, cannabis use in Canada, evidence linking cannabis use and unintentional poisonings, recommendations on limiting poisoning exposures including those due to cannabis edibles and a high level outline of key messages to consider for caregivers. Although edibles will not be legal for sale in October 2018, homemade edibles will be available through personal use of cannabis products (i.e. adults will be able to make their own cannabis-infused foods and beverages).

### POISONING PREVENTION

As defined by the Centers for Disease Control and Prevention, a poison is any substance, including medications, that is harmful to your body if too much is eaten, inhaled, injected, or absorbed through the skin. An unintentional poisoning occurs when a person taking or giving too much of a substance did not mean to cause harm (1).

### WHAT IS CANNABIS & WHAT ARE CANNABIS EDIBLES?

In May 2017, the Canadian Pediatric Society published a position statement on cannabis and Canadian children and youth. They define cannabis as follows: “Cannabis refers to various psychoactive preparations of the plant cannabis sativa, including marijuana (the dried and crushed leaves and flower buds), hashish (the resin of flower buds) and cannabis extracts (i.e., oils or wax)” (2). Cannabis is the most common illicit drug used among Canadian youth (3). However, alcohol continues to be the number one substance used by Nova Scotia students followed by cannabis and cigarettes (4). Cannabis can be inhaled (as smoke or vapour) or ingested, depending on its form (e.g. smoked as joints (cannabis cigarettes), blunts (cannabis cigars), vapes and pipes (from personal devices to large, shared bongs)). ‘Edibles’ or cannabis-infused food products in various formats, including cookies, candies, butter and beverages, may attract children and youth as well as those who wish to avoid smoking (2).

### WHY FOCUS ON YOUNG CHILDREN?

The presence of cannabis at home places children at risk of unintentional exposures and could result in unintentional poisoning or other serious health concerns. Young children are at particular risk for poisoning because they explore their environment by putting objects in their mouths. Children have closer contact with their environment than adults and spend a large portion of their time in the home. Young children explore their

environment by crawling on the floor and ground, putting their fingers in their mouths, touching and tasting things without knowing if they are harmful. Also, their motor skills are changing quickly at this age and they start climbing. This changes what children can reach and how quickly they can reach for objects.

Young children are also more vulnerable to poisoning because of their light weight. For example, an adult dose of medication can be fatal to a small child. Children can also be more sensitive to certain harmful substances because of their stage of development (5). Young children are at risk of developing significant symptoms following cannabis ingestion such as coma, significant motor impairment, tremors, depression and anxiety (6, 7). Studies prior to 2018 conclude that early cannabis use by children or youth negatively impacts brain development and may lead to long-lasting problems such as psychosis and problems with cognitive functioning (8). As well, the evidence is currently clear regarding an increased risk of developing psychosis or schizophrenia if an individual has a predisposition to those conditions and consumes significant quantities of cannabis over a period of time (7). However, it is unclear whether occasional use of cannabis also impairs cognitive functioning in the long term (7). Long term cannabis use is not in the scope of this paper.

## **MAGNITUDE OF THE PROBLEM (ALL POISONINGS AMONG CHILDREN)**

### *Canada*

As outlined by Parachute, the Public Health Agency of Canada estimates an average of three deaths each year in Canada among children aged 14 years and younger from unintentional poisoning, while another 900 are hospitalized with serious injuries (9). This age group remains at highest risk for unintentional poisoning. Prescription drugs account for the majority of Canadian poisonings. Young children are most frequently exposed to potentially toxic substances (52% under the age of six account for 52% of all exposures) (10). Death from unintentional exposure to non-pharmaceutical household products are most likely to occur in children (10).

While interventions such as child-resistant packaging for prescription drugs and other products have been considered a success in preventing unintentional poisonings in Canada, data indicates that pediatric injury from pharmaceuticals continues to be on the rise (10).

### *Atlantic Canada (11)*

Over the 10-year period from 2004-2013, the overall rate of hospitalizations due to unintentional poisoning injuries experienced a statistically significant average decrease of 2.9% annually. During this same time, the average number of hospitalizations was 80 each year.

- 71% of unintentional poisoning hospitalizations occurred among children between the ages of 1 and 4 years.
- The majority of the unintentional poisonings reported were as a result of ingestion of a medication (64%).

### *Nova Scotia/Prince Edward Island*

The IWK Regional Poison Centre (RPC) strives to ensure that optimal individualized care is provided in the event of a real or potential poisoning. Specialized nurses, pharmacists, and physicians serve the public and health care providers of Nova Scotia and Prince Edward Island with a 24 hour/seven day a week telephone service that provides access to expert clinical advice aimed at limiting or preventing injury due to drugs or poisons.

From 2007-2017, the RPC received nearly 31,000 calls regarding various unintentional poisoning exposures among children 5 years and younger (12). In Nova Scotia specifically, the top three highest reported unintentional

poisonings among this age group included exposure to household cleaning substances, ingestion of analgesics (i.e. painkillers) and access to cosmetics/personal care products (13)

- >40% of calls are about children under the age of 5 years;
- >70% of home poisonings can be managed safely at home, saving a trip to the emergency department.

Data from the RPC revealed that between 2007 and 2017, 234 calls related to cannabis poisoning were made to the poison centre for youth ages 13-19 years old and 30 were made for those ages 0-12. One hundred percent (100%) of exposures in children under 12 years were classified as unintentional. Overall cannabis related calls to the poison centre have more than doubled from 36 in 2007 to 106 in 2017 (14).

## CHANGE IN TRENDS/EMERGING ISSUE IN CANADA

### CANNABIS USE

Canada is ranked among the top countries for past-year cannabis use (15). The prevalence of cannabis use in the past year was 12% among the general population (i.e. ages 15 and older) which is an increase compared to 2013 (11%) (16). According to the 2012 Nova Scotia Drug Use Survey (Grades 7, 9, 10, 12), cannabis is the second most often used substance by students (34.7%) (4). In addition, the first 1<sup>st</sup> use of cannabis was 14.3 years of age (4).

According to the National Center on Addiction and Substance Abuse in the United States (17), reports of unintentional exposures to cannabis among children aged 5 and younger were historically rare (18). However, there are several explanations for this including the restricted availability and accessibility of cannabis to young children because cannabis was illegal throughout the United States (19). In addition, because it was illegal, caregivers may have been reluctant to report cases of childhood exposure for fear of social stigma or legal repercussions (20).

Between 2006 and 2013, the rate of exposures in children increased significantly by 147.5 percent. This increase was largely attributable to States that had legalized medical cannabis (17). A study in Colorado showed an increase in the number of emergency department visits of children due to ingestion were linked to cannabis ingestions (after legalization). Most of the ingested cannabis sources were edibles (19). In Colorado, the rate of cannabis exposure cases (mostly from edible products) captured by the regional poison center increased by 34% (from 2009-2015) (21). Cannabis was not stored in child-resistant packaging in 9% of exposures and in 34% of cases, cannabis was not stored properly or the child was inadequately supervised (21). Edible products were responsible for 51 exposures (52%) (21). From 2005-2011, 985 cases of unintentional exposure to cannabis products in the United States were reported among children nine years of age and younger (22).

The National Center on Addiction and Substance Abuse (Childhood Poisoning: Safeguarding Young Children from Addictive Substances) (17), summarize the following:

- In the United States the majority of unintentional cannabis exposures in children are via ingestion with rare cases of passive inhalation leading to clinically adverse outcomes (23).
- A number of reports have suggested that unintentional ingestion of edibles is the main source of pediatric marijuana poisonings (23) since these products frequently have high levels of THC compared to marijuana (cannabis) buds (19). Even a small amount of ingested edibles has the potential to cause severe symptoms with slow onset and prolonged duration (24).

## Concerns

### UNINTENTIONAL CANNABIS EXPOSURE IN CANADIAN CHILDREN

Local data indicates that the majority of all unintentional poisonings among children 5 years and younger occurs most frequently in their *own* home and this pattern continues up to 19 years of age (12). Several studies in the United States indicate that poison control centers have seen increases in cannabis exposures among young children since the legalization of cannabis and the increased presence of cannabis edibles in the home (25).

Cao, et al., (25) summarize several key factors that have increased the risk of exposure to cannabis among young children in the United States and these would be most relevant in Canada. These factors are outlined below:

- Similarities in appearance of edibles to non-cannabis food and beverage products (Look- a- likes)
- Packaging that is appealing to children/dosage inconsistency
- Lack of child-resistant packaging for these products in some States
- Improper storage of cannabis products in the home

#### *Look-a-likes*

Cannabis products that resemble other products can increase the risk of unintentional ingestion, particularly by children and youth (15). Young children cannot always differentiate between general products and those that pose a poison risk. Cannabis edibles are often manufactured in the form of candy and sweets making them indistinguishable from non-cannabis infused products (candies, beverages). There have been cases in the United States where companies have produced and packaged cannabis edibles to closely mimic popular candies such as Kit Kat bars and other sweets (cookies) (26).

In July 2018, a four-year old child in Nova Scotia found a chocolate bar and ate 15 pieces. The chocolate bar was an edible cannabis product, and the recommended consumption for an adult was one piece per day. The child found the bar in the console of the family vehicle (27). If users make their own personal edibles these often look like common candy and sweets in both appearance and taste (e.g., brownies, cookies), increasing their appeal to children (26). Cannabis edibles, such as gummy bears and other candy, should be prohibited, as they pose an unnecessary risk to their health and safety of children (28). Once out of the package, many types of cannabis edibles are indistinguishable to young children from other food and drink products (26).

#### *Packing that is appealing to children/Improper packaging and storage/dosage*

As mentioned above, many cannabis edible products are marketed as appetizing and indistinguishable from non-cannabis products, making them appealing, especially to younger people (21). As well, many of these edibles contain higher levels of THC that is considered to be a safe dose creating the potential of ingesting more than one serving and producing adverse clinical symptoms even in small doses (25). Consumers commonly assume that a candy bar constitutes a single serving, however in the United States, some of these products contain four or more times the level of tetrahydrocannabinol (THC) that is considered to be a safe dose (26). In addition, cannabis edibles being marketed in this fashion may increase the appeal to consumers and normalize use (26). Manufacturing practices for cannabis edible products are not standardized. This results in edible products with inconsistent THC concentrations, further complicating dosing for users (29).

In addition, cannabis will eventually be legally available in various forms including higher concentrated products such as oils, budders (type of hash oil), waxes and shatter weed, posing a high risk to young children who may not be able to recognize these products potential harms. More research is needed to examine how and whether the toxic or lethal dose of cannabis differs between adults and children (17).

#### *Availability*

In States where cannabis is legal, edibles are also widely available, therefore contributing to an increase in exposures. In the document, *Childhood Poisoning – Safeguarding Young Children from Addictive Substances*, (17), G. Sam Wang, MD Assistant Professor of Pediatrics Emergency Medicine and Medical Toxicology University of Colorado Anschutz Medical Campus Children’s Hospital Colorado states “Unintentional pediatric exposures to marijuana have undoubtedly increased since the legalization of recreational marijuana...Many exposures involve edible products – things like brownies and gummy bears that would naturally appeal to children – and, in most cases, the product belonged to a parent, grandparent, neighbor, friend, babysitter, or other family member.” (p. 57).

*NOTE: Edibles being sold commercially in Canada will not be legal until sometime in 2019. However, people will be able to make their own products for consumption (e.g. brownies, butter, etc.).*

#### *Improper storage/limited supervision/packaging*

Improper storage of poisonous products, making them accessible and easy to ingest by young children, is a common identified risk factor in childhood poisoning. Products taken out of their original, well-marked containers and put into a different storage containers increase the chances of unintentional poisonings among children in the home (30). Evidence of how children access poisons suggest that the most vulnerable time is when the poisons are in use. Therefore, ensuring safe and effective storage of cannabis and other poisonous products within the home is crucial (12).

## **BEST PRACTICES**

As outlined in *Childhood Poisoning – Safeguarding Young Children from Addictive Substances*, (15), there are many steps caregivers, health care professionals, and policymakers can take to limit unintentional exposures to cannabis in children (e.g. caregivers practicing safe storage, physicians being more attuned to the symptoms of cannabis exposure, and policymakers passing legislation regulating cannabis edibles). Preventing childhood poisonings requires a multi-strategy approach (31).

Comprehensive approaches to preventing poisonings in general among children requires targeted interventions that include the 3 E’s of injury prevention: Education, Engineering of certain household products, as well as regulation – Enforcement - through legislation (10). This is no different when it comes to preventing cannabis poisoning. Several of these practices, while in many cases have limited evidence to support full effectiveness, are identified/suggested below.

#### *E: Education*

Unintentional exposures to cannabis among young children is one of the many unintended consequences of legalization and commercialization. Smart Colorado, which focuses on protecting youth in Colorado from cannabis, stresses the importance of cannabis education and keeping cannabis away from children (32).

- Evidence suggests that caregiver knowledge, availability and accessibility as well as ease of use of poison control centers increases likelihood that they will be accessed and used (33).
- Studies have also found that caregiver's perceived toxicity of a substance is linked to the likelihood of them putting away the substance after use, and safely storing it (34).
- Developing and implementing educational interventions that incorporate multidisciplinary teams (i.e. pharmacists, nurses, public health workers, injury prevention personnel) and are delivered broadly (i.e. with greater community participation) are supported by evidence (10).
- Although key messages to caregivers focus on safe storage, the efficacy of lock boxes is unclear (although if a box is child resistant, this may prove to be an effective approach to consider).

[See end of document for key messages for caregivers]

*E: Engineering | E: Enforcement (policy/legislation and measures to ensure compliance):*

In January 2018, the IWK Health Centre submitted recommendations to Health Canada regarding their proposed approach to the regulation of cannabis in Canada. One key recommendation was to control the potency (THC content and THC/CBD ratio) and safety (packaging) of cannabis products (35). Modifications to how prescription medication/drugs are packaged has been successful in North America. This includes child resistant, unit dose and size limited packaging (33).

- *Child resistant*: Legislation of child resistant packaging reduces the incidence of poisonings (33). Child-resistant packaging and education on safe medication storage have saved thousands of children's lives (36, 37). Child resistant packaging (CRP) generally requires two dissimilar motions to open the container and must comply with at least one of the Canadian Standard Association, European or the United States federal regulations standards.
- *Unit dose* (Limiting THC serving size (labelling ratios & ingredients)): Because dosage estimations for retail products (and homemade products) may be inexact, consistent dosage of products is important in minimizing a potential over exposure (38). The concentration of THC must be systematically measured and reported as done with medicine. Standardizing the production and premarket testing of edible products may help limit inadvertent overdoses (29).
- *Restriction on marketing*: Marketing that appeals to children, carries potential to create brand loyalty and mimics other products designed for children and youth (38).
- *Packaging* (Restrictions of packing (plain & child resistant)): To reduce the appeal of edibles, plain packaging such as those used with tobacco could be a deterrent. Plain packaging is recommended by the World Health Organization as an effective tobacco control measure (39). While effective, packaging cannot be a standalone approach to preventing unintentional poisonings. Secure storage of poisonous items including medications removes a larger portion of poisoning risk than strictly caregiver awareness and supervision (33).

Evidence suggests that legislation for poison prevention in children is most effective when combined with and supported by educational activities (33). Policies around the marketing of edible products (i.e. plain packaging and health warnings) including advertising controls around packaging – aim to safeguard young people from confusing cannabis products with other edible products.

As recommended in *Childhood Poisoning – Safeguarding Young Children from Addictive Substances* (17), health care professionals and Public Health experts, health and pediatric organizations can work to prevent unintentional childhood exposures to cannabis by affirming their position on cannabis legalization (40), documenting the

potential impact of cannabis legalization on children, (40) and recommending and demanding adequate legislation and regulation to protect children and the public from any harms associated with cannabis legalization (41).

## ADDITIONAL GAPS

Additional gaps to preventing children's injuries from unintentional poisonings in general in the home do exist. Some of these include:

- Very few studies that evaluate the impact of poison center public educational interventions. Of the ones that have been conducted, many failed to demonstrate significant impact on public behavior (10);
- Interventions that have weak designs and/or unclear outcome measures;
- Lack of evaluation of effectiveness of warning labels/hazard symbols on certain household products;
- Lack of accessibility to educational opportunities as well as affordability of secure storage measures pertaining to proper storage of poisonous materials in the home.
- Lack of knowledge of edible overdoes context (product ingested, time of day, room at home, etc.).
- Tertiary effects from cannabis edibles (e.g. driving under the influence with children in the car; negligence by caretakers/babysitters, contamination of cooking utensil and kitchen environments if making edibles at home).

## CONCLUSION

Child-friendly edibles increase a minors' risk of exposure to cannabis (29). In terms of cannabis edibles and poisoning prevention, the National Center on Addiction and Substance Abuse (17), stresses that regulations related to cannabis should prioritize preventing unintentional pediatric exposures by:

- Requiring child-resistant packaging;
- Eliminating packaging deemed attractive to children or requiring plain packaging with no logos or branding;
- Regulating the appearance of cannabis edibles to ensure they do not resemble candy or other sweets, prohibiting flavoring in nonedible products, or possibly banning edibles that might be attractive to children;
- Limiting the amount of THC allowed in cannabis edibles;
- Requiring clear labeling of all cannabis-containing products, with graphic warnings about the potential for childhood poisonings and the risk of psychosis when used in youth less than 25 years of age; and
- Implementing a data surveillance system to monitor the impact of cannabis legalization.

Health Canada also outline recommendations specific to cannabis storage (42):

- Installing strong locks on the doors to all areas where you produce or store cannabis and/or installing a home monitoring or alarm system;
- Storing cannabis in a safe or equally protected location that is secured with a lock (e.g., cabinet, closet, or trunk);
- Ensuring cannabis and cannabis products are stored in child resistant containers to avoid accidental ingestion.

## KEY MESSAGES FOR CAREGIVERS

- Keep drugs in the child-resistant packaging from the retailer and invest in a safe or lockbox to store edibles (43, 44).
- Make sure your child can't see or reach the locked cabinet or box (44).
- How you store cannabis and cannabis products should change as children get older. Safe storage around young children may not stop older children or teens (44).
- Put cannabis products away every time after use, even if you plan on using again later. Always dispose of waste products like ashes and unfinished joints (45).
- Request that your guests store any purses, coats, or bags containing cannabis products in a secure place while they are in your home.
- If you use a babysitter, ensure that they are mature, responsible, and recommended by someone you trust. Ask them to keep any cannabis products 'up and away' while caring for your child, whether that be at your home or theirs (45).



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