

PedsCases Podcast Scripts

This is a text version of a podcast from PedsCases.com on “Cannabis and Canada’s Children and Youth – CPS Podcast.” These podcasts are designed to give medical students an overview of key topics in pediatrics. The audio versions are accessible on iTunes or at www.pedcases.com/podcasts.

CANNABIS AND CANADA’S CHILDREN AND YOUTH – CPS Podcast

Developed by KEON MA and Dr. CHRISTINA GRANT for PedsCases.com
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INTRODUCTION:

Keon: On June 21, 2018, Bill C-45, also known as the Cannabis Act, came into law. Canada is preparing for the legalization of marijuana on October 17, 2018. For healthcare providers, the impact of legalization is going to raise a number of important questions. As it stands today, one third of youth in Canada have tried cannabis at least once by age 15. How should we counsel families about the health effects of recreational marijuana, and what is the evidence for its impact on children and youth?

My name is Keon Ma. I’m a second-year medical student at the University of Alberta in Edmonton. This podcast was produced by PedsCases and the Canadian Paediatric Society (CPS), and will discuss the recent CPS position statement entitled: “Cannabis and Canada’s Children and Youth”. I’m joined by the lead author of this statement, Dr. Christina Grant, Associate Professor and Associate Chair Education with the Department of Pediatrics at McMaster University. Dr. Grant, could you tell us how you became involved in writing this statement?

Dr. Grant: I became involved as a member of the CPS Adolescent Health Committee. We knew, a number of years ago, that the Liberal party coming to power would have the legalization of cannabis as one of their main platform promises. We wanted to be ahead of the curve and start summarizing the state of the art evidence for what the concerns were with respect to cannabis use in youth.

LEARNING OBJECTIVES:

Keon: Thank you so much for joining me today! The objectives of today’s podcast are:

1. Understand how oral versus smoked cannabis affects the pharmacokinetics of cannabis and why that is important
2. Describe the effects of cannabinoids on the developing brain
3. Discuss the relationship between cannabis and psychiatric concerns
4. Describe cannabis intoxication and safety concerns

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5. Describe Cannabis Use Disorder (CUD) and Cannabis Withdrawal Syndrome (CWS)
6. Understand the importance of education and current CPS recommendations to government and to healthcare providers in relation to cannabis use in children and youth

This podcast will not review the evidence and indications for the medical use of cannabis in children. This is reviewed in a separate CPS statement.

BACKGROUND:

Keon: To start off, could you give us a brief overview of how cannabis works in the body?

Dr. Grant: Absolutely. Cannabis is a broad term referring to psychoactive preparations from the plant *Cannabis sativa*, including marijuana, hashish, cannabis oils or waxes. It's also commonly referred to as 'pot', 'grass' or 'weed'. Cannabis contains a number of cannabinoid compounds, the most well-studied of which are delta-9-tetrahydrocannabinol (THC) and cannabidiol or (CBD). The high associated with cannabis can include euphoria, relaxation and altered perceptions. However, some people also experience adverse effects such as anxiety, panic and impaired task performance. Areas that are impaired under the influence include: short term memory, performance of complex mental tasks, attention, judgement, reaction time and motor skills. Cannabis is very lipophilic, so it tends to stay in the tissues and is slowly released. This is important to know, as drug tests for cannabis can be positive for weeks to months following ingestion.

Keon: What are the different ways that people can use cannabis?

Dr. Grants: Users can either inhale, smoked, or vaporized cannabis or ingest it orally as edible preparations. The effects of smoked cannabis occur within minutes. In contrast, oral cannabis products can have a delayed onset, taking 1-5 hours to reach full effect. This delayed onset can lead to cannabis intoxication, often, which can happen in 2 ways. In some cases, because it can take hours for the user to feel the effects, users overcompensate by consuming more. There have also been a number of cases where cannabis edibles have been accidentally consumed by younger children. The symptoms of cannabis overdose can include severe drowsiness or respiratory depression.

MARIJUANA'S EFFECTS ON BRAIN DEVELOPMENT:

Keon: I've heard some people claim that marijuana is "safe" for the brain. What does the latest research show?

Dr. Grant: The human brain continues to develop into the early 20s, and the concern is that cannabis use in the developing brain may lead to greater adverse consequences. The main chemical associated with the perceptual and emotional effects of cannabis is THC, which act on cannabinoid receptors. These receptors modulate the secretion of gamma-aminobutyric acid and glutamate, which are two neurotransmitters that contribute substantially to neurodevelopment. Cannabinoids are produced endogenously and help to mature cortical neuronal networks through the actions of dopamine, but additional THC will overload the system, resulting in dysfunctional pathways and neuron toxicity.

Structural MRI studies of cannabis users have showed lower brain volume, thinned cortex, less neural connectivity, and lower white matter integrity. Functional MRI studies have shown increased neural activity, which indicates that the brain is compensating by working harder to complete tasks. These mechanisms could lead to long-term impacts on neurodevelopment and mental health.

ASSOCIATION WITH PSYCHIATRIC DISORDERS:

Keon: I've also heard that marijuana might be related to some psychiatric disorders. Could you speak to that a bit?

Dr. Grant: Although no causal link with depression has been verified to date, cannabis use is associated with an increase in mood disorders, but some suggest that long-term use from adolescence to early adulthood is required. Acute and transient psychosis can be caused by cannabis use even without prior history of mental illness. The symptoms are wide-ranging, including: depersonalization, de-realization, dream-like euphoria, disorientation, delusions, hallucinations and paranoid ideation. What is more concerning is that greater than 50% of youth who have these symptoms will develop a future psychotic disorder, and the risk of developing schizophrenia is almost doubled in heavy cannabis users who started using young.

Longer term associations may include impairments in school performance and a dose-related association of heavy cannabis use with lower IQ scores. One study found those who don't use cannabis had more favourable socioeconomic and health outcomes at age 29 compared to early heavy users. Direct causation is uncertain as there may be other contributing factors; however, there are strong associations.

USE OF MARIJUANA AND OTHER SUBSTANCES:

Keon: Well based on what you've said, it sounds like marijuana isn't as safe as people claim. Is the use of cannabis also associated with the use of other substances?

Dr. Grant: Research indicates cannabis use is often associated with use of other substances like alcohol and tobacco. 80% of young cannabis users also smoke

tobacco, and may use the technique of 'mulling': adding tobacco to cannabis cigarettes. Not only is there a substantial exposure to nicotine, but withdrawal symptoms from both substances is more severe than with just one. Youth who use cannabis during adolescence are six times more likely to consume ecstasy in the future, and a study from France showed that nonusers of Cannabis had a 0.4% rate of illicit drug use, versus 25% for regular cannabis users. Another dangerous trend is the use of synthetic cannabinoids, more commonly referred to as 'K2' or 'spice'. These can be 100x more potent than THC, and can result in acute renal failure and death.

CLINICAL CONTEXT

Keon: Can people become dependent on cannabis if they use it long term?

Dr. Grant: Yes, it's known as **Cannabis Use Disorder** in the DSM, which is defined as cannabis use resulting in functional impairment within a 12-month period. For adolescents, this includes:

1. Reduced academic performance
2. Withdrawal from usual peer groups, conflict with family
3. Truancy
4. Reduced participation and interest in extracurricular activities

We know that males and older youth are more likely to be diagnosed with CUD.

Keon: And what if they try to stop? What symptoms might they experience?

Dr. Grant: That's called **Cannabis Withdrawal Syndrome**. It's a relatively new diagnosis under the DSM-5, and it includes both psychological and physical symptoms.

The diagnosis requires 2 of 5 psychological symptoms, which include:

1. Irritability
2. Anxiety
3. Depressed mood
4. Sleep disturbance
5. Appetite changes

And 1 of 6 physical symptoms, which include:

1. Abdominal pain
2. Fever
3. Shaking
4. Chills
5. Headache
6. Diaphoresis

These symptoms occur after stopping heavy cannabis use, which is defined as daily or near daily use for at least a few months. Withdrawal symptoms often happen within 24-

72 hours after the last use, and they may persist up to 1-2 weeks. Sleep disturbance can be up to 1 month. Unfortunately, these symptoms, especially the sleep disturbance, may result in relapse of cannabis use.

Keon: From what I understand, some people think it's okay to drive while under the influence of cannabis. Is that a concern?

Dr. Grant: Yes. We know that youth are not as concerned about driving high on cannabis as driving drunk, but cannabis use significantly increases the risk of dying and more than doubles the risk of having a motor vehicle accident. The combination of both alcohol and cannabis is more lethal than alcohol itself.

Cannabis-impaired driving is now more common among adolescents than alcohol-impaired driving. Unfortunately, there are currently no reliable acute markers of cannabis use, as urine metabolites can persist up to around 77 days.

In 2017, the Canadian Centre on Substance Abuse found that reasons that youth use cannabis include:

- Fitting in with family and friends
- Availability and acceptability of cannabis
- Coping with stress

According to this study, youth are generally unaware of the detrimental effects of cannabis to the brain, or the fact that you can become dependent on it.

RECOMMENDATIONS:

Keon: It sure sounds like we have some work to do to ensure Canadian youth are well-informed about how cannabis affects their bodies. Based on all that we've discussed so far, what does the CPS recommend?

Dr. Grant: We've made a number of recommendations, and for the government, we've recommended that:

- Prohibit sales in person or online of all cannabis products to youth under the legislative age to purchase tobacco and alcohol
- Limit the concentration of THC in cannabis that young adults (18-25 years old) can consume or purchase
- Regulate marketing of cannabis to minors, including prohibiting sales close to schools, community centres, and places where youth are frequently found, or through self-service
- Mandate strict labelling of the ingredients (plain and not attractive), concentrations clearly communicated, and there be warnings of potential harmful effects
- Ban cannabis-products appealing to children like candies

- Extend anti-tobacco legislation to include cannabis (i.e.: no smoking in public places or in cars with children)
- Fund public health campaigns, which they are starting to do
- Develop programs for roadside detection of those under the influence
- Increase funding for mental health promotion
- Consult with Indigenous communities in Canada around how to communicate and assist
- Actively monitor the impacts of consumption once legalization took effect

The CPS also has 3 recommendations for health care providers:

- Be aware of health risks related to cannabis use
- Screen children and youth for cannabis exposure and educate on the risks and harms associated with cannabis
- Provide pre-emptive education to parents and older children on the potential health risks of cannabis use

Education around cannabis use is crucial. Research has shown that the more youth perceive cannabis to be less harmful, the more frequently they will use cannabis. With the changing legislation to legalize marijuana, it is important to emphasize to youth that making a substance legal does not reduce its risks.

Keon: We've gone through a lot of information today. Do you mind summarizing the key takeaways for listeners?

Dr. Grant: Not at all, Keon. There are 7 key points.

1. Oral consumption of cannabis has delayed effects compared to inhalation due to different pharmacokinetics and can also lead to overconsumption because users don't feel the 'high' right away
2. The human brain doesn't fully develop until the early 20s, and cannabis use results in both structural and functional changes in the brain
3. There are mental health risks associated with cannabis use, including acute psychosis and potentially mood disorders, and the risk of developing schizophrenia is almost doubled in heavy cannabis users who started using young.
4. Cannabis use is associated with tobacco, alcohol and other substances, but youth tend to be relatively naïve about its potential harmful effects and the cumulative effects when using more than 1 substance
5. Cannabis edibles can be mistaken for sweets by younger children, and result in cannabis intoxication
6. The criteria for Cannabis Use Disorder (CUD) and Cannabis Withdrawal Syndrome (CWS) are important diagnoses to be aware of given changing policies around the legalization of cannabis
7. Education is key: the more youth perceive cannabis to be less harmful, the more frequently they will use cannabis

Keon: That's wonderful. Do you have anything else you'd like to share?

Dr. Grant: We've covered a lot today, but more research is continually being done and produced, and another podcast might need to be developed if things are to change drastically, especially as we see what happens with legalization in Canada.

Keon: Thank you Dr. Grant for sharing your insight into recreational cannabis use in Canadian children and youth. We hope this podcast has been informative. Thank you for listening!

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