



Canadian Centre
on Substance Abuse
Centre canadien **de lutte**
contre les toxicomanies

Partnership. Knowledge. Change.
Collaboration. Connaissance. Changement.

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What To Expect Maternal Cannabis Use during Pregnancy and the Impacts on Offspring

Presentation for:
2016 Best Start Conference

Amy Porath-Waller, PhD

Katie Fleming, MA

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About CCSA

Substance abuse is a complex problem, too significant and too deeply rooted to be solved by one group or one approach

- CCSA is Canada's only national agency dedicated to reducing the harms of alcohol and other drugs on society
- Created by an Act of Parliament in 1988, CCSA has provided national leadership, and advanced knowledge and solutions to address alcohol- and other drug-related harms, for over a quarter-century

***We bring people and knowledge together
to make a difference in the lives of Canadians***


CCSA's National Priorities



National Framework
for Action (2005):
*Collective action for
collective impact*

Learning Objectives

1. Review the effects of prenatal cannabis exposure on development and behaviour
2. Identify implications of maternal cannabis use during pregnancy
3. Provide a brief summary of the effects of maternal opioid use during pregnancy
4. Discuss what healthcare providers can do



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Clearing the Smoke on Cannabis

Maternal Cannabis Use during Pregnancy – An Update

Amy J. Porath-Walker, Ph.D.
Director, Research and Policy (Intims), CCSA

Key Points

- Cannabis is the most commonly used illicit drug during pregnancy.
- Prenatal exposure to cannabis has adverse effects on cognitive development and academic achievement.
- There are also effects on behaviour, including attention deficits, increased hyperactivity and impulsivity.
- There is also emerging evidence of an increased likelihood of smoking, substance abuse and delinquency among adolescents who were prenatally exposed to cannabis.
- Information on the effects of cannabis use during pregnancy is essential to help healthcare providers advise patients about the impact of cannabis use and improve the health and well-being of patients' children.

Background

Cannabis, also referred to as marijuana, is the most widely used illicit drug in Canada. According to the 2013 Canadian Tobacco, Alcohol and Drugs Survey (CTADS), 10.6% of Canadians aged 15 years and older reported using cannabis at least once in the past year (Statistics Canada, 2015), unchanged from 10.2% in 2012. The use of cannabis is generally more prevalent among youth, with 22.4% of youth aged 18 to 19 and 26.2% of young adults aged 20 to 24 reporting past year use. Approximately 27% of Canadians aged 15 and older who used cannabis in the past three months reported that they used the drug every day in 2012 (Health Canada, 2013).

A growing body of evidence suggests that cannabis use may negatively impact several aspects of people's lives, including mental and physical health, cognitive functioning, ability to drive a motor vehicle, and pre- and postnatal development among children. In this report – one in a series reviewing the effects of cannabis use on various aspects of human functioning and development (see Bettes & Porath-Walker, 2009; Diplock & Ploace, 2006; Kalant & Porath-Walker, 2014; Porath-Walker, 2008) – the effects of prenatal cannabis exposure on offspring the birth outcomes, neurocognitive development,

This is the second in a series of reports that review the effects of cannabis use on various aspects of human functioning and development. This report on the effects of maternal cannabis use during pregnancy on children provides an update of a previous report with new research findings that reinforce and extend our current understanding of this issue. Other reports in this series address the effects of chronic cannabis use on cognitive functioning and mental health, cannabis use and driving, and respiratory effects of cannabis use. This series is intended for a broad audience, including health professionals, policy makers and researchers.

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Background

- Cannabis is the most widely used illicit drug in Canada
 - 10.6% of Canadians aged 15+ years (CTADS, 2013)
- Cannabis use
 - Is generally more prevalent among youth aged 15–19 (22.4%) and young adults aged 20–24 (26.2%) (CTADS, 2013)
 - Can negatively impact pre- and postnatal development of children



Prevalence of Cannabis Use during Pregnancy

- Cannabis is the most frequently used illicit drug during pregnancy
 - In the United States, 5.2% of pregnant women aged 15–44 (i.e., childbearing age) report past-month cannabis use (SAMHSA, 2013)
 - In Canada, approximately 11% of women of childbearing age report past-year use of cannabis (Health Canada, 2012)

Effects on Pregnancy, Fetal Development and Birth Outcomes

- There is little evidence to suggest an association between cannabis use during pregnancy and an increased risk of premature birth, miscarriage or major physical abnormalities (Day et al., 1991; Fried, Buckingham, & Von Kulmiz, 1983)
- Mixed evidence of reduced fetal growth and birth outcomes (i.e., weight and length of child)
- Smoking may disrupt the supply of oxygen and nutrients to the fetus

Effects on Neurocognitive Functioning

- Among offspring of mothers who smoked cannabis heavily during pregnancy
 - Ages 3+: possible deficits in memory, verbal and perceptual skills, and verbal and visual reasoning (OPPS & MHPCD)
 - At age 6: impaired performance in verbal and quantitative reasoning, and short-term memory (MHPCD)
 - About age 9: possible impaired abstract and visual reasoning, poor performance on tasks reflecting executive functioning (OPPS & MHPCD)

Effects on Neurocognitive Functioning (cont'd)

- Vulnerability in visual-cognitive functioning persists into early adolescence (Fried, Watkinson, & Gray, 2003)
- Poorer academic achievement test scores at age 14 (MHPCD)
- Deficits in information processing speed and visual-motor coordination at age 16 (MHPCD)
- Negative impacts on neural circuitry involved in aspects of executive functioning, including response inhibition and visuospatial working memory among youth aged 18–22 (Smith, Fried, Hogan, & Cameron, 2004, 2006)

Behavioural Effects

- Increased risk of aggressive behaviour and attention problems as early as age 18 months in girls, but not boys (Generation R)
- Impaired vigilance among exposed children at age 4 (MHPCD)
- Increased hyperactivity, inattention and impulsivity at age 6 (Fried, Watkinson, & Gray, 1992; Leech, Richardson, Goldschmidt, & Day, 1999)

Behavioural Effects (cont'd)

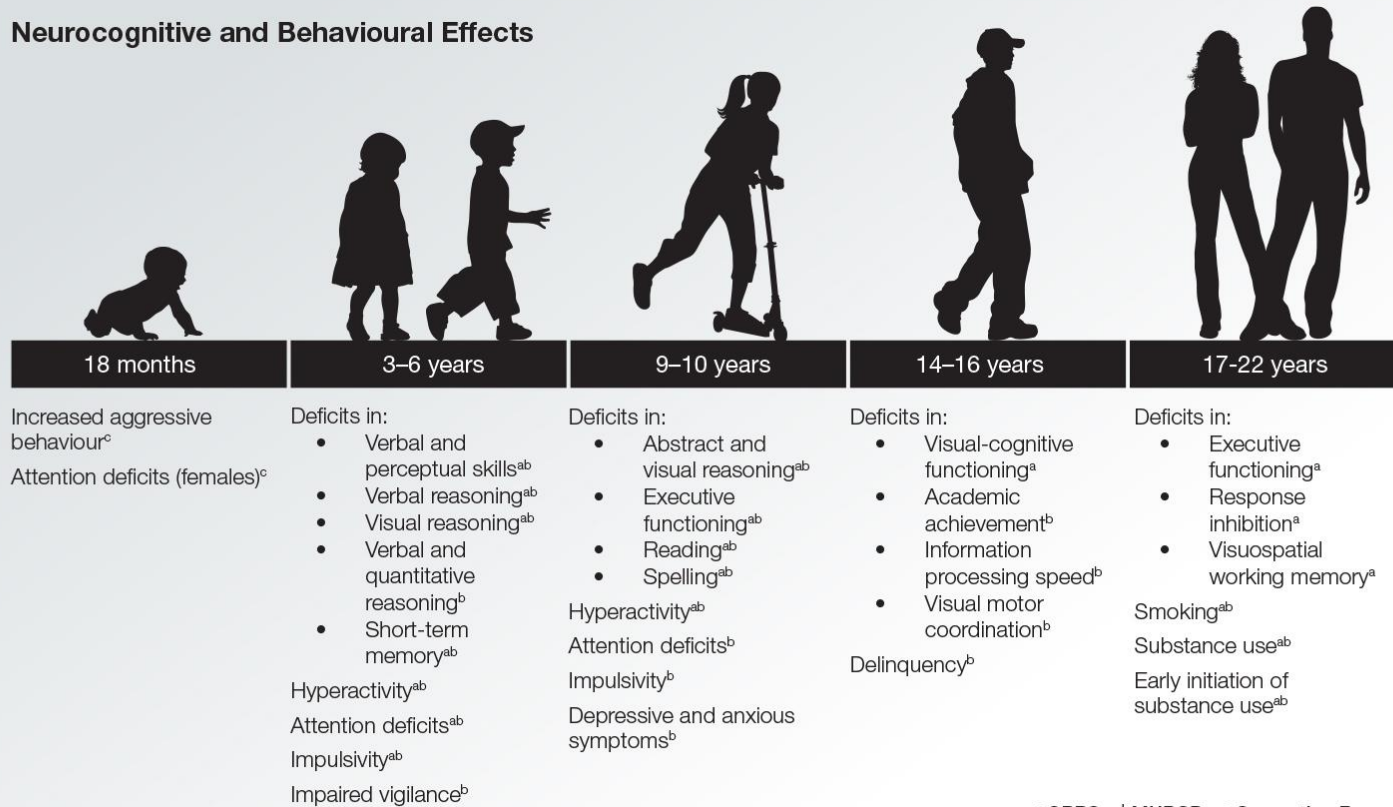
- Increased hyperactivity, inattention and impulsivity, and increased rates of delinquency and externalizing problems at age 10 (Fried et al., 1998; Goldschmidt, Day, & Richardson, 2000)
- Twice as likely to display delinquent behavior at age 14 (MHPCD)
- Increased risk for the initiation and daily use of cigarette smoking and cannabis use during adolescent, age 16–21 (Porath & Fried, 2005)
- Increased risk for early and frequent cannabis use at age 14 (Sonon, Richardson, Cornelius, Kim & Day, 2015)

Effects on Mental Health

- Emerging evidence linking *in utero* cannabis exposure to depressive and anxious symptomatology
 - Children of maternal cannabis users expressed significantly more depressive and anxious symptoms at age 10 compared to children of non-users (Gray, Day, Leech, & Richardson, 2005; Leech, Larkby, Day, & Day, 2006)
 - Need for longitudinal studies in this area

Neurocognitive and Behavioural Effects

Neurocognitive and Behavioural Effects

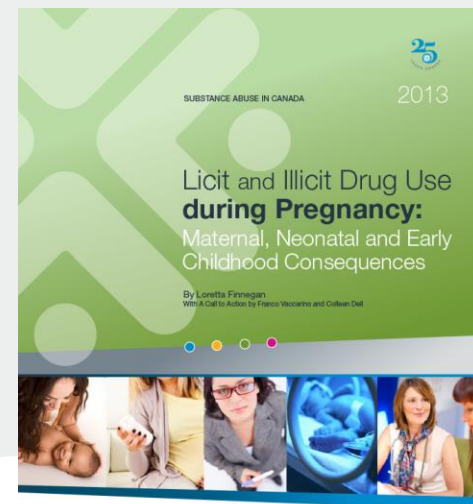


^a OPPS ^b MHPCD ^c Generation R
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Opioids and Pregnancy

- Opioids are some of the drugs most commonly taken during pregnancy
- The risks to maternal and infant health as a result of opioid use during pregnancy include:
 - Miscarriage
 - Preterm birth
 - Low birth weight
 - Respiratory disorders/failure
 - Present in breast milk



Neonatal Abstinence Syndrome

- Infants born to chronic opioid users are frequently born with a dependency to such drugs and experience withdrawal after the opioids cease to be administered following birth
- Neonatal abstinence syndrome has a negative impact on vital bodily functions such as feeding, elimination and sleeping
- Recent Canadian estimates suggest that 0.3% of infants are born with neonatal abstinence syndrome (CIHI, 2012)
- Treatment can involve medication and non-pharmacological interventions aimed at calming the infant (e.g., skin care, low-stimulation environments)

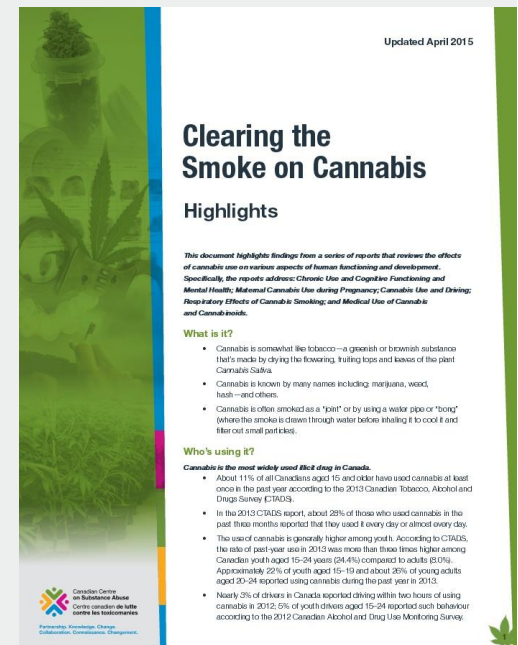
What Can Healthcare Providers Do?

- Become knowledgeable about the effects of substance use during pregnancy
- Advise pregnant women and women thinking of becoming pregnant of the risks of substance use during pregnancy
- Screen for substance use during pregnancy
- Initiate discussion in an unbiased compassionate way with patients and their families

Additional Resources

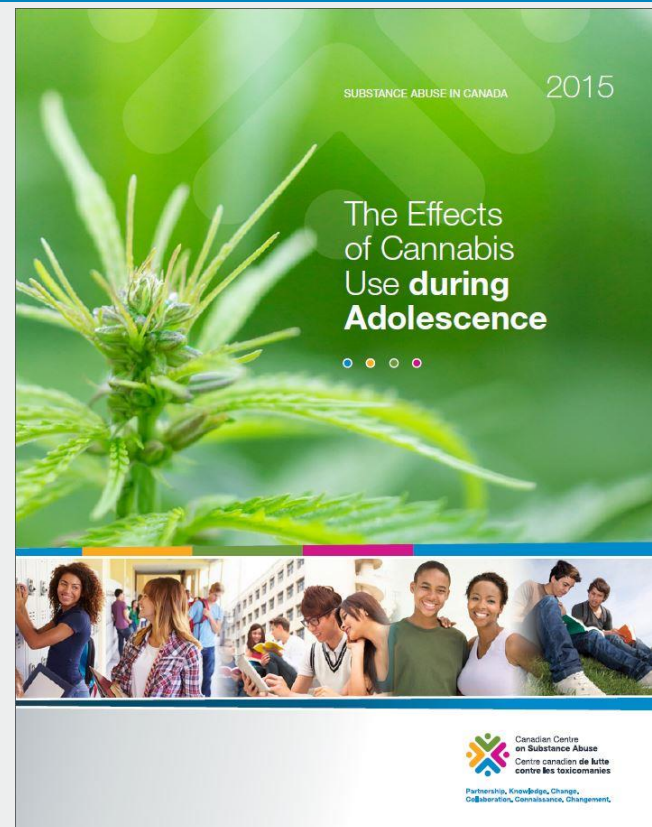
For further information, see our Clearing the Smoke on Cannabis series:

- **NEW:** Respiratory Effects of Cannabis Smoking
- Maternal Cannabis Use during Pregnancy
- Cannabis Use and Driving
- Chronic Use and Cognitive Functioning and Mental Health
- Medical Use of Cannabis and Cannabinoids



New Research: The Effects of Cannabis Use during Adolescence

- Report summarizes what is known and not known about the effects of youth cannabis use
- Infographic for parents: Help your teen understand what's fact and fiction about marijuana
- Available online at ccsa.ca



Thank You

Questions?

Contact Information

Amy Porath-Waller, PhD
Director, Research and Policy
APorath-Waller@ccsa.ca

Katie Fleming, MA
Knowledge Broker
kfleming@ccsa.ca

Canadian Centre on Substance Abuse
75 Albert Street, Suite 500
Ottawa, ON K1P 5E7
613-235-4048



@CCSAcanada • @CCLTcanada