Acute life-threatening harms related to illicit/non-medical use of opioids, stimulants, or sedatives

CPSP
CANADIAN PAEDIATRIC SURVEILLANCE PROGRAM

PROTOCOL

Principal investigators

Matthew Carwana, MD, MPH, FRCPC, FAAP, Paediatrician, BC Children's Hospital, Clinical Assistant Professor, University of British Columbia, Investigator, BC Children's Hospital Research Institute, matthew.carwana@cw.bc.ca

Nicholas Chadi, MD, MPH, FRCPC, FAAP, Adolescent and Addiction Medicine, Centre hospitalier universitaire Sainte-Justine, Clinical Assistant Professor, Department of Paediatrics, Université de Montréal, nicholas.chadi.med@ssss.gouv.qc.ca

Eva Moore, MD, MSPH, FRCPC, FAAP, Adolescent Medicine Physician, BC Children's Hospital, Clinical Associate Professor, Department of Pediatrics, University of British Columbia, eva.moore@cw.bc.ca

Co-Investigators

Richard Bélanger, MD, FRCPC, Adolescent Medicine Physician, Université Laval

Daniel Brody, MD, FRCPC, Paediatric Emergency Medicine Physician, McGill University

Sara Citron, MD, FRCPC, Paediatrician, Klondyke Medical

Camille Fournier, MD, FRCPC, Paediatrician, Centre hospitalier universitaire Sainte-Justine, and Clinical Assistant Professor, Department of Paediatrics, Université de Montréal

Jessica Foulds, MD, FRCPC, Paediatrician, University of Alberta

Laurie Horricks, MN, NP-paeds, Nurse Practitioner, Psychiatry Consult Liaison Service, McMaster Children's Hospital

Sarah Gander, MD, FRCPC, Paediatrician, New Brunswick Social Pediatrics

Christina Grant, MD, FRCPC, Adolescent Medicine Physician, McMaster University

Shawn H. Kelly, MD, FRCPC, Paediatrician, Children's Hospital of Eastern Ontario

Karen Leslie, MD, MEd, FRCPC, Adolescent Medicine Physician, University of Toronto

Charlotte Moore Hepburn, MD, MPH, FRCPC, Paediatrician, University of Toronto

Hasina Samji, PhD, Epidemiologist, Simon Fraser University

Tatiana Sotindjo, MD, FRCPC, Adolescent Medicine Physician, BC Children's Hospital, and Clinical Assistant Professor, Department of Pediatrics, University of British Columbia

Laurence Truchon, MD, FRCPC, Adolescent Medicine Physician, Université de Sherbrooke

Trisha Tulloch, MD, MS, FRCPC, FAAP, Assistant Professor, Department of Paediatrics, University of Toronto, Adolescent Medicine Physician, The Hospital for Sick Children, and Addiction Medicine Service, Centre for Addiction and Mental Health

CPSP
CANADIAN PAEDIATRIC SURVEILLANCE PROGRAM

Collaborator

Bridget Maloney-Hall, MPH, Senior Epidemiologist, Substance-Related Harms Division, Public Health Agency of Canada

PROTOCOL

Background

Illicit drug overdose is a public health emergency in Canada (1). The syndemic impact of COVID-19 has exacerbated the adverse outcomes of overdose, driving up mortality rates (2). Despite the fact that opioid use disorder is predominantly viewed as a medical issue affecting adults, an increasing number of youth in Canada suffer from acute, life-threatening overdose; it is now the leading cause of death in youth ages 10 to 18 years in Western Canada, due to the high prevalence of fentanyl and other high-potency opioids in illicit drug markets (3,4). Data from the Public Health Agency of Canada suggests that approximately 2% of overdose deaths and 5% of overdose hospitalizations in Canada occur in youth aged 19 years and under (5).

A 2022 Canadian Paediatric Surveillance Program (CPSP) one-time survey conducted by this study team demonstrated the impact of acute and life-threatening overdose on Canadian children and adolescents. Results showed that 115 providers cared for at least one adolescent with life-threatening overdose over a two-year period, with 263 events described: 65 opioid overdoses requiring reversal, 74 stimulant use overdose complications, 76 sedative use overdose complications, and 48 youth presenting with opioid use disorder requiring pharmacotherapy. These results highlight the impact, not only of opioid-related overdoses and episodes of care, but also the prevalence of acute and life-threatening consequences from misuse of sedative and stimulant drugs.

Despite the urgency of this clinical issue, there is limited evidence outlining risk factors, best practice, and outcomes for this marginalized population. Evidence is predominantly either community-based and qualitative (user perspectives) or administrative data-driven (6-9). While these data sources are important, there is a significant gap in case-based clinical data. What little is known, demonstrates that youth are likely to receive substandard care after an overdose event (10,11).

This study builds on the 2022 CPSP one-time survey on severe or life-threatening opioid, stimulant, or sedative use. It will collect important case-based data to inform future research and practice in support of youth that use opioids, stimulants, or sedatives. It will collect meaningful, high-impact data to improve the care of this equity-deserving population and improve outcomes for youth in Canada.

Methods

Through the established methodology of the CPSP, approximately 2,700 paediatricians and paediatric subspecialists in Canada will receive a monthly electronic reporting form. Participants will be asked to voluntarily indicate if they have encountered a case of acute life-threatening harms related to illicit/non-medical use of opioids, stimulants, or sedatives in the prior 30 days. Clinicians who report encountering a case will be directed to complete a detailed questionnaire online. Respondents will also be asked if they agree to be contacted for clarifying questions on their responses (if needed).

In order to maximize case capture, this study will utilize the following two specific tactics:

1) ***Study-specific reporters*** will be identified through the network of study co-investigators. These reporters will be clinicians who are not registered with the CPSP, but who work in locations where there is a strong likelihood of case presentations, such as emergency medicine physicians at adult hospitals in urban centres, nurse practitioners, or family physicians in more rural environments. Up to 15 study-specific reporters will be added to the CPSP distribution list for this study and they will abide by existing CPSP guidance for case reporting. They will only report cases that they cared for in clinical practice; they will neither solicit nor report cases cared for by other providers with whom they work.

2) ***Site champions*** will be clinicians at paediatric centres who work in environments where there is a high likelihood of case presentations, including the emergency department, intensive care unit, and inpatient units. Site champions will support the study by helping to raise awareness of the study with paediatric colleagues, and by encouraging colleagues to report cases. They will not be reporting cases on behalf of colleagues.

Case definition

Report any patient less than 18 years of age (up to their 18th birthday) requiring any of the following:

- Emergency department care, hospitalization, or admission to an intensive care unit (ICU)
- Resuscitation (e.g., naloxone) outside of hospital*

Due to either of the following:

- Use of an illicit/non-prescription opioid, stimulant, or sedative substance
- Non-medical use of a prescription opioid (e.g., codeine, hydromorphone, oxycodone), stimulant (e.g., psychostimulants), or sedative drug (e.g., benzodiazepines, barbiturates) (e.g., using prescription medication in a manner other than as prescribed, using prescription medication prescribed to someone else)

Exclusion criteria:

- A condition due to inadvertent exposure to another person's substances (e.g., child accidentally ingesting an adult's substance)
- A condition resulting from use of an illicit substance during pregnancy/breastfeeding (information already captured elsewhere)

- A condition resulting from indicated use of medications prescribed to the patient for medical purposes
- A condition arising from accidental misuse of medications prescribed to the patient for medical purposes
- A condition resulting solely from the use of alcohol, cannabis, vaping, cigarettes, and/or tobacco products

[*] *Children and adolescents who experienced a critical toxicity incident and received emergency resuscitation outside of hospital at the time of the incident (e.g., community-based naloxone administration) are also eligible for this study when they present for a first health care visit following resuscitation in the community.*

Objectives

1) Describe the event rates for patients less than 18 years of age presenting with acute life-threatening harms related to illicit/non-medical use of opioids, stimulants, or sedatives in Canada
2) Describe the clinical presentations, substances used, co-morbidities, social context, and outcomes of patients less than 18 years of age seeking medical attention with acute life-threatening harms related to illicit/non-medical use of opioids, stimulants, or sedatives in Canada
3) Describe the medical care (level of care, pharmacotherapy, etc.) and other interventions (e.g., counselling, connection to substance use team) received by patients less than 18 years of age presenting with acute life-threatening harms related to illicit/non-medical use of opioids, stimulants, or sedatives in Canada

Duration

October 2024 to September 2027

Expected number of cases

Though recent statistics suggest increasing numbers of youth presenting to care for opioid overdose across Canada, the current incidence of acute life-threatening harms related to illicit/non-medical use of opioids, stimulants, or sedatives in Canadians less than 18 years of age is largely unknown, as only a fraction of youth with these issues seek medical care.

Based on data from the recent CPSP one-time survey, it is estimated that, for each of the following substances, the approximate maximum number of cases per year to be reported to the CPSP will be as follows:

- Opioids: 50–75
- Stimulants: 60–80
- Sedatives: 60–80

Study limitations

As with any voluntary reporting surveillance system, the CPSP recognizes that reporting on event rates can have limitations, including under-representation of the condition in the population. It is possible that some groups of children and adolescents will be missed, including those living in rural and remote areas as they may be less likely to receive specialist paediatric care, and those presenting

to adult hospitals without paediatric consultation. Further, some data elements, including aspects of the medical and social history desired in the study, may not be collected during clinical care of patients, and therefore will be absent from surveillance data.
Specifically for this study, the study team is aware that access to paediatric providers may be reduced in remote/rural areas or in certain populations (e.g., Indigenous populations) and eligible cases may present to non-paediatric providers. This represents an important limitation to this study which could lead to an under-estimation of the burden of life-threatening harms from illicit/non-medical use of opioids, sedatives, or stimulants in the under-18 population. To help remediate this situation, the study team will identify study-specific reporters (see Methods section) in remote/rural areas or predominantly adult settings who will report cases where paediatric providers participating in the CPSP may not be providing care directly to youth. It is hoped that this strategy will help mitigate the possibility of missed data due to reduced 5cess to paediatric providers.

Finally, it is recognized that, in certain localities, older adolescents (e.g., ages 16 to 17 years) may seek care from, or be directed to, adult hospitals. As noted above, study-specific reporters will be identified at key sites where there may be high numbers of youth presenting to adult hospitals. This study limitation will need to be considered during the analysis phase of the project and the research team will work with the Public Health Agency of Canada to triangulate CPSP data with other available data sources (e.g., overdose mortality data).

Ethical approval

- Health Canada and Public Health Agency of Canada Research Ethics Board
- BC Children's Hospital Research Institute Research Ethics Board

Analysis and publication

Data will be analyzed by the principal investigators with the support of their respective research institute infrastructures via Stata and/or R software. Analysis will be primarily descriptive (means with standard deviations or medians with interquartile ranges for continuous variables, percentages for categorical variables). Multivariable logistic and Poisson regression may be used for secondary outcomes to describe demographic variables independently associated with the risk of overdose presentations or severity of presentation.

Knowledge translation

Results and conclusions will be disseminated through academic meetings, publications, and professional networks to guide clinical care, research, and service delivery. Principal investigators will engage with the Canadian Paediatric Society leadership to develop materials (e.g., practice points, position statements, conference presentations) based on the findings that are relevant to paediatricians. Results will also be shared with community members and community-based organizations.

In addition, study results will be shared with public health partners to guide the development of policy and preventive interventions. Knowledge translation activities will target government and civil society decision-makers with the goal

of making substantive improvements in funding and service delivery to this population.

References

1. Pearce LA, Min JE, Piske M, Zhou H, Homayra F, Slaunwhite A, Irvine M, McGowan G, Nosyk B. Opioid agonist treatment and risk of mortality during opioid overdose public health emergency: population based retrospective cohort study. *BMJ* 2020 Mar 31;368:m772. doi: 10.1136/bmj.m772.

2. Holland KM, Jones C, Vivolo-Kantor AM, et al. Trends in US Emergency Department Visits for Mental Health, Overdose, and Violence Outcomes Before and During the COVID-19 Pandemic. *JAMA Psychiatry* 2021;78(4):372–9. doi:10.1001/jamapsychiatry.2020.4402.

3. BC Centre for Disease Control. Top ten causes of death by age group in BC for March 2020 to February 2022. Personal Communication with Reka Gustafson, June 21, 2022.

4. British Columbia Coroners Service Death Review Panel: A Review of Illicit Drug Toxicity Deaths. Report to the Chief Coroner of British Columbia; 2022 Mar. Available from: https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/death-review-panel/review_of_illicit_drug_toxicity_deaths_2022.pdf.

5. Federal, Provincial, and Territorial Special Advisory Committee on the Epidemic of Opioid Overdoses. Opioid- and Stimulant-related Harms in Canada. Ottawa (ON). Public Health Agency of Canada; 2022 Mar. Available from: https://health-infobase.canada.ca/substance-related-harms/opioids-stimulants/

6. Canêdo J, Sedgemore KO, Ebbert K, Anderson H, Dykeman R, Kincaid K, Dias C, Silva D, Youth Health Advisory Council, Charlesworth R, Knight R, Fast D. Harm reduction calls to action from young people who use drugs on the streets of Vancouver and Lisbon. *Harm Reduct J* 2022 May 4;19(1):43. doi: 10.1186/s12954-022-00607-7.

7. Goodyear T, Mniszak C, Jenkins E, Fast D, Knight R. "Am I gonna get in trouble for acknowledging my will to be safe?": Identifying the experiences of young sexual minority men and substance use in the context of an opioid overdose crisis. *Harm Reduct J* 2020 Mar 30;17(1):23. doi: 10.1186/s12954-020-00365-4.

8. Friedman, J., Godvin, M., Shover, C.L., et al. Trends in drug overdose deaths among US adolescents, January 2010 to June 2021. *JAMA* 2022;327(14):1398–1400. doi:10.1001/jama.2022.2847.

9. Gilley M, Sivilotti MLA, Juurlink DN, Macdonald E, Yao Z, Finkelstein Y. Trends of intentional drug overdose among youth: a population-based cohort study. *Clin Toxicol* (Phila) 2020 Jul;58(7):711–5. doi: 10.1080/15563650.2019.1687900. Epub 2019 Nov 24.

10. Krausz M, Westenberg JN, Tsang V et al. Towards an International Consensus on the Prevention, Treatment, and Management of High-Risk Substance Use and Overdose among Youth. *Medicina* 2022;58(4):539. doi: 10.3390/medicina58040539.

11. Alinsky, R.H., et al. Receipt of addiction treatment after opioid overdose among Medicaid-enrolled adolescents and young adults. *JAMA Pediatrics* 2020;174(3):e195183. doi:10.1001/jamapediatrics.2019.5183.