



# Polysubstance Use and Poisoning Deaths in Canada

## Key Points

- This report summarizes key findings from the first study to use vital statistics death data to examine national patterns and trends of polysubstance poisoning deaths in Canada.
- Polysubstance use is common and is becoming a primary driver of substance poisoning deaths in Canada. Increased rates of substance poisoning deaths between 2014 and 2017 were attributable to polysubstance use.
- In 2017, 57% of all accidental poisoning deaths were from polysubstance use, compared to only 39% in 2014.
- About two-thirds of accidental drug poisoning deaths caused by **opioids** involved at least one other substance in 2017, compared to only half in 2014.
- The most common polysubstance deaths for both males and females were combinations of opioids, cocaine and other central nervous system stimulants such as methamphetamine.

*BMC Public Health* recently published an original research paper that provides insight into polysubstance poisoning deaths in Canada from 2014 to 2017 (Konefal et al., 2022). This report is a summary of that research under a [Creative Commons licence](#).

## Background

High rates of poisoning deaths related to opioids have become a worsening public health crisis in Canada over the past decade. The rate of opioid-related poisoning deaths more than doubled between 2016 and 2020, from 7.8 deaths to 17.3 deaths per 100,000, and has accelerated at an alarming rate since the beginning of the COVID-19 pandemic. Several factors have contributed to a worsening of the crisis, including an increasingly toxic drug supply and polysubstance use (Special Advisory Committee on the Epidemic of Opioid Overdoses, 2022). The findings presented here are further evidence to show that what was once defined solely as an opioid crisis is now a polysubstance crisis.

### What is a polysubstance poisoning death?

A poisoning death is an acute toxicity death resulting from the direct effects of consuming a substance. It is considered a polysubstance poisoning death when two or more substances have contributed to the death.

Polysubstance use – when two or more substances are consumed together or one after the other – has played a prominent role in high rates of deaths related to opioid poisoning. A recent study shows that people who use drugs (PWUD) consume on average between 2.6 and 4.0 different substances (Canadian Centre on Substance Use and Addiction, 2022). Individuals may choose to consume two or more substances for many reasons, including the desire to enhance the experience of substance



use, to balance the effects of one substance with another or to mimic the effect of a preferred substance that is unavailable (Boileau-Falardeau et al., 2022; Gomes et al., 2021). However, polysubstance use can often occur unknowingly. COVID-19 related changes to the illegal drug supply have increased the likelihood that PWUD are consuming unexpected or undesired substances along with the substances they deliberately choose to consume (Canadian Centre on Substance Use and Addiction and the Canadian Community Epidemiology Network on Drug Use, 2020; Canadian Centre on Substance Use and Addiction, 2022; Payer et al., 2020).

With polysubstance use being the norm rather than the exception among PWUD (Boileau-Falardeau et al., 2022; Canadian Centre on Substance Use and Addiction, 2022; Russell et al., 2021), there is a need for improved data to monitor polysubstance use in Canada, as well as the prevalence of associated harms such as poisoning deaths. This report at a glance summarizes the findings from a recently published study that is the first to use national vital statistics death data to characterize substance poisoning deaths in Canada (Konefal et al., 2022). The data comes from Statistics Canada's Vital Statistics Death database, which is a census of all deaths occurring in Canada in any given year and includes demographic and cause of death information. This report is intended to inform prevention, treatment, harm reduction and other policies that can reduce risks for PWUD in Canada.

## Key Findings

Between 2014 and 2017, overall crude mortality rates of substance poisoning deaths increased 2.0-fold among males and 1.8-fold among females. Most substance poisoning deaths – 85% in 2014 and 92% in 2017 – are unintentional. Analyses show that the increase in unintentional substance poisoning deaths is due to polysubstance use:

- Between 2014 and 2017, polysubstance death rates doubled among females and tripled among males while death rates involving only one substance remained unchanged.
- The proportion of unintentional poisoning deaths that were polysubstance deaths increased from 39% in 2014 to 57% in 2017.

Analyses also show that:

- The most common causes of polysubstance deaths for both males and females were combinations of opioids, cocaine and other central nervous system stimulants such as methamphetamine.
- The proportion of deaths involving opioids and at least one other substance increased from 50% to 66% between 2014 and 2017. About two-thirds of unintentional opioid deaths involved at least one other substance in 2017, compared to half in 2014.
- The proportion of deaths involving alcohol and at least one other substance also increased between 2014 and 2017 from 49% to 74%.

### What is an unintentional poisoning death?

Also called an accidental poisoning death, this is an acute toxicity death that is **not** purposely self-inflicted. This includes cases when a substance is taken accidentally, when too much of a substance is consumed by accident or when the wrong substance was taken in error.



## Implications for Research, Policy and Service Provision

Polysubstance use has important implications for public health surveillance and research. Research gaps and opportunities identified by this study include:

- Identifying factors and pathways (e.g., behaviours and demographic characteristics) linked to polysubstance use and harms.
- Identifying specific substances within drug classes that are involved in polysubstance deaths (e.g., fentanyl, methamphetamine).
- Understanding if polysubstance use is intentional, and, if not, the discrepancies between what substances PWUD expect they are consuming versus what they are actually consuming (Canadian Centre on Substance Use and Addiction, 2022).
- Improving accuracy of toxicology screenings and consistency of coding substance poisoning deaths carried out by coroners and medical examiners.

**57%** of all unintentional substance poisoning deaths in 2017 involved more than one substance category.

**66%** of all unintentional **opioid** poisoning deaths in 2017 involved at least one other substance category.

Investing in early childhood and adolescence supports and wellbeing during sensitive periods of development and targeting common risk factors is also important for reducing harms from polysubstance use (Sadeh et al., 2021). Further, the delivery of treatment and harm reduction services can be structured to address issues associated with multiple substances and problematic substance use in general. Examples include:

- Reducing system fragmentation across the spectrum of services from harm reduction to treatment, primary care and socioeconomic supports (Russell et al., 2021).
- Increased expansion of and access to harm reduction services including drug checking services, supervised consumption sites and take-home naloxone kits.
- Implementing treatment strategies that target common features of substance use disorders, including the use of substances as a coping mechanism (Compton et al., 2021).
- Ensuring availability of treatment and withdrawal management services that can manage the unpredictability of withdrawal from multiple substances.

Addressing the unpredictability of the illegal drug supply will also reduce the number of deaths from polysubstance use. To do so requires policies that provide legal, pharmaceutical-grade options for opioids and other substances (Canadian Association of People Who Use Drugs, 2019). Improving the conditions of PWUD may also include a range of evidence-based policies and practices that decriminalize the possession of controlled substances for personal use (Jesseman & Payer, 2018).

## Additional Resources

- [Community Urinalysis and Self-Report Project](#)
- [Adulterants, Contaminants and Co-occurring Substances in Drugs on the Illegal Market in Canada](#)
- [Changes in Stimulant Use and Related Harms](#) (CCENDU Bulletin)
- [Risks and Harms Associated with the Nonmedical Use of Benzodiazepines in the Unregulated Drug Supply in Canada](#) (CCENDU Bulletin)
- [Nitazenes](#) (CCENDU Drug Alert)
- [Substance Use Harms Among Canadian Men: A Spotlight on Unintentional Deaths](#)



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ISBN 978-1-77178-970-7

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