Sex differences in non-fatal overdoses: A population-based cohort study

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BACKGROUND

Canada is experiencing a drug toxicity and overdose (OD) crisis that continues to devastate communities. British Columbia (BC) is the province with the highest rate of fatal drug ODs, nearly double the Canadian national average.[1] Sex differences in fatal ODs show that men have a higher mortality rate than women.[2] Among people with HIV (PWH), women have higher hazards of drug-involved mortality than men.[3] Little is known about sex disparities in non-fatal ODs (NFODs).

AIMS

Investigate sex disparities in NFODs among people with and without HIV in BC, Canada

METHODS

- We used data from the **Comparative Outcomes and Service Utilization Trends (COAST) study** between January 1st, 2012 – March 31st, 2020.
- COAST is a population-based, longitudinal cohort study in BC with linked administrative datasets.[4]
- Administrative health records are available for **all known PWH in BC** (n=12,717) and a 10% random sample of the HIV-negative population (n=473,947), ≥19 years of age.
- We identified NFODs presenting at an emergency department, hospitalized and/or attended by a physician at another medical setting outside of the hospital using ICD-9 and ICD-10-CA codes found in these linked administrative datasets (**Table 1**).

Table 1. Datasets and ICD codes to define NFODs.

Source	Type	ICD Codes
Medical Services Plan (MSP)	Physician claims	965, 967, 969, 970, 971, 977 (ICD-9)
Discharge Abstract Database (DAD)	Hospital discharges	T40, T41, T42, T43, T44, X40-X44, X60-X64, Y10-Y12 (ICD-10-CA)
National Ambulatory Care Reporting System (NACRS)	Emergency department discharges	T401, T405, T406, T407, T409, T424, T439, T469, T509 (ICD-10-CA)

References: 1. BC Coroners Service. Illicit Drug Toxicity Deaths January 1, 2011 to July 31, 2021. Ministry of Public Safety and Solicitor General; 2021. 2. Humphreys K, Shover CL, Andrews CM, et al. Responding to the opioid crisis in North America and beyond: recommendations of the Stanford-Lancet Commission. Lancet. 2022;399(10324):555-604. 3. St-Jean M, Dong X, Tafessu H, et al. Overdose mortality is reducing the gains in life expectancy of antiretroviral-treated people living with HIV in British Columbia, Canada. International Journal of Drug Policy. 2021:103195. 4. Eyawo O, Hull MW, Salters K, et al. Cohort profile: the Comparative Outcomes And Service Utilization Trends (COAST) Study among people living with and without HIV in British Columbia, Canada. BMJ Open. 2018;8(1):e019115.

In British Columbia, Canada, the incidence of non-fatal overdoses is **higher** among people with HIV than those not living with HIV. This is **especially apparent** among **women** with HIV.

RESULTS

Overall, 21.8% (n=2767) of PWH and 49.7% (n=235,655) of people without HIV were female. Females with HIV experienced 2.5 recurrent NFODs, whereas males experienced 1.8 recurrent NFODs, on average. In unadjusted analyses, females with HIV were more likely to experience an NFOD than males with HIV (incidence rate ratio (IRR): 2.17, 95%CI: 2.04, 2.30).

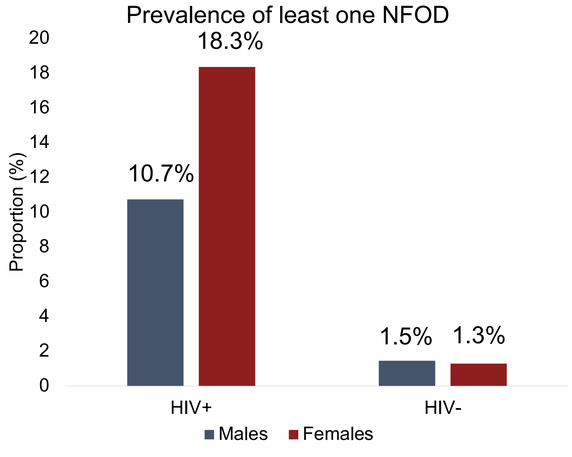


Figure 1. Proportion of people who experienced at least one NFOD.

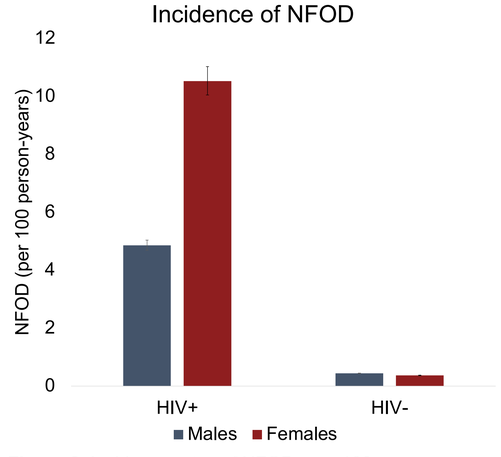


Figure 2. Incidence rates of NFODs per 100 person-years.

CONCLUSIONS

Key takeaways from our analyses are:

- 12.4% (n=1577) of PWH and 1.4% (n=6516) of people without HIV in BC experienced at least one NFOD between 2012-2020;
- Sex differences exist among incidence rates of NFODs; the NFOD incidence is twice as high in women compared to men with HIV; and,
- Recurrent OD events are higher among women than men with HIV.

Sex disparities in NFOD rates are important to explore further, given the potential for adverse health outcomes after NFODs, including both physical and mental impacts. Our findings suggest the need for policies and programs oriented toward women to mitigate overdoses, especially programming tailored for women with HIV.

LIMITATIONS and FUTURE DIRECTIONS

There are important considerations of this analysis:

- These analyses contain unadjusted estimates, and thus, bias by confounding. Future directions will take confounding into account.
- Administrative data is prone to coding errors which could result in misclassification bias.
- This data does not include NFODs which occurred without precipitating physician contact. For example, paramedic-attended NFODs where the person was not transported to a hospital are not included. NFODs occurring where a friend, bystander, or other person administered naloxone without contacting emergency services are not included.
- Data is cut off as of March 31st, 2020. Given that overdose rates increased in the post-COVID-19 era, this analysis will be replicated with data after COVID-19 to determine current trends.

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