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Title	High rate of fatal overdose after release from prison in British Columbia: a retrospective data linkage study
Authors	Stuart A. Kinner PhD, Wenqi Gan MD PhD, Amanda Slaunwhite PhD
Reviewer 1	Dr. Fiona Kouyoumdjian
Institution	McMaster University, St. Michael's Hospital, Hamilton, Ont.
General comments (author response in bold)	Thank you for the opportunity to review this interesting and important paper. The paper is very well written. **We thank the reviewer for their kind words.** Here are specific comments: Background: -you say that a public health emergency was declared in 2016, but the period under study is 2015-2017. Could you clarify why this period was selected up front? -This Canadian study also looked at deaths post-release: https://protect-au.mimecast.com/s/4oCLCNLwzjF0ol3wAsm2Pe3?domain=journals.plos.org **The public health emergency was declared in 2016, but in response to evidence of increasing overdose rates in 2015. Thank you for drawing our attention to this second study; we now refer to it in the Introduction:** **"A second study linked all overdose deaths in Ontario between 2006 and 2013 with provincial correctional records; 10% of overdose deaths in the province occurred within a year of release from prison, and 20% of these deaths occurred within one week of release".** Methods: -Why did you select a 20% sample of the general population? Given that provincial prison involvement is a relatively uncommon exposure, could you justify whether this is sufficient? **In the Provincial Overdose Cohort, a 20% random sample of the general population was included to serve as a reference group of the broader BC population, to facilitate epidemiologic research using various statistical methods. The 20% random sample can be used to generate findings that reflect the general population. This study is based on those data. The data governance framework and large number of datasets that are linked for the POC prevent us from extracting data on all BC residents or all incarcerated persons. While the number of people with an incarceration history in this random sample was not very large, the linked individual and neighbourhood data used in this study are unique and novel, and are not available anywhere else in Canada. Our findings are generalizable to the BC population because the cohort is a stratified random sample of the entire BC population.** -Could you comment on the validity of using hospital records to identify people with SUD and mental illness? **We ascertained SUD and mental illness from hospital outpatient and admitted patient records. In our supplementary materials, we specify the ICD-9 and ICD-10 codes used to define these conditions. Since these diagnoses were made by medical professionals, we have no reason to doubt their validity. However, we note in the Limitations that we likely under-ascertained SUD and mental illness using this approach:** **"..administrative data may under-ascertain some exposures of interest (e.g.,**

	SUD, mental illness), which would have attenuated observed associations". Despite this, 56% of those who died and 46% of those who did not die had a recorded diagnosis of SUD and/or mental illness. -spelling error- page 4- surveillance is spelled incorrectly **Thank you, this has been corrected.** -how are you distinguishing between opioids prescribed for pain and opioids prescribed for other reasons (including safe supply)? **In our provincial pharmaceutical dataset (PharmaNet), there are specific fields to indicate whether opioids are prescribed for opioid dependence or for pain. We used these fields to identify persons using opioids for non-pain purposes.** Results: -spelling mistake on line 52- included is spelled incorrectly **Thank you, this has been corrected.** -I don't find it easy to interpret the meaning of the adjusted analyses. Why is this adjustment helpful? I suggest you justify your use of these adjusted regression models in the Methods. **We present both unadjusted and adjusted hazard ratios because we anticipated covariance among some of our exposures. For example, the unadjusted hazard of overdose death was 3.10 (95%CI 1.97-4.88) times higher among those with a comorbidity, than among those with no physical comorbidities. This was attenuated to 1.61 (95%CI 0.99-2.61) in the adjusted model. Similarly, the HR for benzodiazepine dispensing decreased from 3.31 (95%CI 2.27-4.84) in the unadjusted model to 1.41 (0.91-2.18) in the adjusted model. Although we are not in a position to draw strong conclusions regarding causal pathways, in our view this information is valuable both for hypothesis generating, and informing public health responses. In the Discussion we consider some possible explanations for these adjusted findings, with an appropriate degree of caution.** -Why those age cats? 45+ is a very broad age group. **Given the relatively small number of outcomes observed (154 deaths) we chose not to disaggregate exposure variables more than necessary. Although 45+ is a broad age category, most adults in BC prisons are aged less than 45. Around one in five in our cohort was aged 45 or older at their first release.** -Figure 1- Could you label the incidence rates? Or you could provide the points and 95% CIs in an Appendix if needed. It would be nice for people to be able to describe the exact incidence rates. **We agree that this would be helpful, and have added a table with the incidence rates and 95%CIs, and numbers of deaths and person years, to the Appendix (Table S1).** Interpretation: -you wrote, "In addition to OAT and naloxone, enhanced efforts to prevent

	untimely deaths after release from prison should consider targeting these co-occurring risk factors." I wonder if these factors are associated with or causes of death. supervision" may be interpreted and operationalized- how about recommending best practices for pain management or something that sounds more positive. **We thank the reviewer for this helpful suggestion. We have revised the text as follows, and added a reference to a recent evaluation of an intervention designed to improve adherence to Canadian Opioid Guidelines among family physicians in Canada:** **"However, given our unsurprising finding that dispensing of opioids for pain was independently associated with a more than four-fold increase in risk of overdose-related death after release from prison, it appears that efforts to improve chronic pain management for this population,20 and enhance harm reduction measures, are warranted to ensure that medications intended to treat chronic pain do not result in preventable deaths in these medically complex individuals."** **Leece, P., Shantharam, Y., Hassam, S., Buchman, D. Z., Hamilton, M., Persaud, N., . . . Furlan, A. D. (2020). Improving opioid guideline adherence: evaluation of a multifaceted, theory-informed pilot intervention for family physicians. BMJ Open, 10(1), e032167. doi:10.1136/bmjopen-2019-032167** -I'm not sure what it means for associations to be "attenuated to the null" in models that are not adjusted to look at a specific association. (Adjustment for confounding could bias toward or away from the null). **"Attenuated to the null" is widely understood to mean that the association is no longer statistically significant after adjustment for covariates.** **van Smeden, M., Lash, T. L., & Groenwold, R. H. H. (2020). Reflection on modern methods: five myths about measurement error in epidemiological research. International Journal of Epidemiology, 49(1), 338-347. doi:10.1093/ije/dyz251** -The final sentence of the Conclusions seems out of scope: "The recent transition of prison healthcare in BC from the Ministry of Public Safety and Solicitor General to the Ministry of Health is consistent with WHO recommendations and may have facilitated better continuity of care, however this assumption requires evaluation.23" I wonder if you would consider saying something more directly linked to the study findings. **Thank you, we have moved this sentence as suggested by the Editor, and added a new sentence that is more directly linked to the study findings:** **"Effective overdose prevention for people who experience incarceration in BC is critical to stemming the tide of overdose deaths in the province, and to mitigating the profound health inequalities experienced by this marginalised population."**
Reviewer 2	Dr. Régis Blais
Institution	Groupe de recherche interdisciplinaire en santé, Université de Montréal, Montréal, Que.
General comments (author response in bold)	This is a well-done and well-written study. **We thank the reviewer for their kind words.** ABSTRACT: Please add "opioid agonist treatment" before using the acronym

	OAT. **Since this is the only time we refer to OAT in the Abstract, we have replaced the acronym with the expanded term: opioid agonist treatment.** INTRODUCTION: line 22: please specify that OD means overdose **We have replaced "OD" with "overdose".** METHODS AND RESULTS: OK INTERPRETATION: Interesting recommendations to target co-occurring risk factors. Last paragraph, line 42-43: 3rd limitation - please provide examples of "some exposures of interest". **We have added some examples as follows:** **"Third, administrative data may under-ascertain some exposures of interest (e.g., SUD, mental illness), which would have attenuated observed associations".** CONCLUSIONS: OK Supplementary materials: to be mentioned in the text, if made available to readers somehow. **The supplementary materials are referred to on two occasions in the Methods: in the paragraph describing the outcome, and in the first paragraph of the section describing the exposures.**