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Title	Coronavirus disease 2019 (COVID-19) testing, infection and complication rates among individuals at risk of homelessness in Ontario, Canada: a retrospective cohort study
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Reviewer 1	Claire Kendall, Dr. Kendall
Institution	C.T. Lamont Primary Health Care Research Group, Elisabeth Bruyere Research Institute,
General comments (author response in bold)	1. I thank the authors for providing the RECORD checklist with their submission. **Thank you for your comments. You will find in our resubmission an updated RECORD checklist.** 2. The authors provide a good background and rationale for the study. Given this is written as a full research paper, I wondered about expanding the introduction into sections: - What is known - Where are the gaps - What this study will add - The objectives **While word count limits restricted our ability to provide a more detailed introduction to the original submission for this study, in our resubmission we have attempted to concisely touch upon the points suggested in our introduction.** 3. I wondered about restating the objective: our aim was to describe rates of COVID-19 testing, positivity, hospitalization and mortality among individuals at risk of homelessness (IARH) and to compare these to community-dwelling individuals in Ontario, Canada. I might continue to refer to the comparison group as community-dwelling Ontarians rather than non-IAHR. **We restated the objective in our introduction as suggested and refer to our comparison group as community-dwelling Ontarians or community-dwelling individuals.** 4. Can the authors clarify whether they used the Hwang validation algorithm AND the new CIHI code from April 2018 to identify cases? **The CIHI coding change in April 2018 affects existing diagnosis variables. More precisely, it is now mandatory to code individuals as homeless using ICD-10 codes Z59.0 and Z59.1. As such, the Richard et al. 2019 validation algorithm was used unchanged, but is likely more sensitive now compared to the validation period.** 5. Also, my quick read of the original validation paper seems to use a +/-45 day window to ascertain homelessness. Can the authors clarify whether they ascertained IAHR for anyone meeting the algorithm between October 1 2018 and May 31 2020 **Our previous validation work tested a number of windows for ascertaining homelessness; we elected to use the calendar year +/- 45 days definition, and further extend our window into the pandemic period to ensure individuals newly homeless during the pandemic are captured. We clarified in the resubmission that we ascertained IARH for anyone meeting the case**

	definition between October 1st 2018 and July 31 2020. 6. p.6 “”Where multiple test records were present, an individual was deemed positive if any test indicated a positive result.” Does this mean they only looked at the first positive test for all individuals? **This is correct. In practice, individuals often had multiple COVID-19 tests. As our analysis was at the individual level rather than at the test level, we only counted the first positive test, where a positive test was present; and the first negative test, where testing existed but no positive test was found, to date our outcomes. We modified our outcomes description to more clearly state this.** 7. For variables, the authors should list the category options. **Thank you, we modified our supplement to include categories for variables as applicable.** 8. Please describe what primary care enrolment means, especially for non Ontario readers, as well as the how this was ascertained beyond stating the CAPE database. **Primary care enrolment refers to rostering with a family physician in any compensation model available in Ontario other than fee-for-service. Enrolment is ascertained by finding participants in the Client Agency Program Enrolment database provided by the Ontario Ministry of Health at index. Following reviewer feedback, we removed this variable from our resubmission.** 9. Please provide references for the chronic disease cohorts. **Thank you, we added references for the chronic disease cohorts in our supplement.** 10. There should also probably be rationale for these comorbidities, especially mental health, in the discussion (ie to substantiate why this might matter to their outcomes). Similarly, I was not sure why they looked at use of care prior to the index event? **We agree the rationale for comorbidities should be more transparent, and have revised our resubmission to note them. Briefly, IARH are at increased risk for many physical and mental health conditions compared to the general population, and also use more health care in general. The listed physical comorbidities affect risk for complications if infected (2); mental health related care was included as a proxy for potential barriers for following pandemic recommendations (3); and number of primary care visits in the past year was included as a proxy for propensity to use healthcare, which may impact the propensity for getting a COVID-19 test. Enrolment with a primary care physician was deemed to have insufficient a-priori rationale for inclusion in our resubmission.** 11. And is index the positive result? The ascertainment of homelessness? **We assigned the same index date to everyone in the study: January 23rd 2020, the date of the first known COVID-19 case in Ontario. We have indicated this more clearly in the description of Participants section.**

	12. The analysis should specific how they selected variables for adjustment and which were included in the models. I see this later in the results section but it should be included in the analysis, and substantiated – not clear to me why previous healthcare use is included. **Thank you, we modified the methods section to list covariates and the rationale for inclusion as adjustment variables. We have now stated that we used previous health care as a proxy for propensity to use health care, which may influence the likelihood of getting a COVID-19 test.** 13. p.8 I would probably refer to prevalence rather than rates of comorbidities **We agree, and have changed the wording in our resubmission.** 14. p. 8 line 33 to 38– these are hazards of the outcomes **We have changed this wording in our manuscript.** 15. p. 8 line 34, small cell suppression should be included in the methods section **We note at the end of the analysis section that we suppressed small cells to protect participant privacy.** 16. p.8 line 38 -these are adjusted rates, so stating "even after adjustment" is implied. The authors should report both unadjusted and adjusted rates. **Thank you, our resubmission results report both unadjusted and adjusted hazard ratios. These are provided in Table 3.** 17. Is the interpretation supported by data in the results? Yes, although I think the discussion could be laid out more clearly by the following format: - What this study found (high level – what's new here) - How this fits with the literature - Limitations (done) - Next steps for policy and practice **Our resubmission required a substantial revision to our discussion. We have structured it based on the recommended schema.** 18. Table 2: I found this table a bit confusing. I suggest the authors create one table with the raw data and another(s) with the full unadjusted and adjusted models for each outcome, being clear about the denominators being used. Readers will want to see the full models. **Our resubmission splits table 2 into two tables, as suggested, and have included full model outputs.** 19. In Table 2, mortality among IAHR is >=5 and is reported as NR (not sure what this means) among all Ontarians. Are these the same? I worry this makes the HR estimate very unstable- the confidence intervals are extremely wide. **ICES studies protect patient privacy suppressing cells less than or equal to five, as well as cells that can be used to recalculate a small cell. 'NR' or 'not reportable' means the cell in question could be used to re-calculate a small cell. In retrospect, the small cell in question (the number of IARH deaths) could not have been recalculated, as follow-up time for each group was not provided in the final submission. With our extended observation window,**

	there were additional IARH deaths, allowing us to report the previously small cell in this version. 20. Figures: Is there are reason this is presented by LHIN (which I don't think are labelled). I'm not sure how much this adds and I would favour presenting the data more transparently (see above). **Following your comments, which agree with that of the editors', we removed regional-level results from our resubmission.** 21. The discussion section might describe whether and how policy has shifted since May 2020. **Thank you, our resubmission now includes data up until July 2020, and have interpreted results accordingly. There are, to our knowledge, no relevant policy shifts pertaining to IARH beyond summer 2020 to describe in our resubmission.** 22. The authors should consider citing: COVID-19 and people experiencing homelessness: challenges and mitigation strategies Melissa Perri, Naheed Dosani and Stephen W. Hwang CMAJ June 29, 2020 192 (26) E716-E719; DOI: https://doi.org/10.1503/cmaj.200834 **We cited the suggested manuscript in our resubmission.**
Reviewer 2	Sebastian Mott
Institution	McGill University, Montréal, Que.
General comments (author response in bold)	1. Using what strikes me as strong methodology, this study identifies case rates of COVID-19 in individuals at risk of homelessness (IARH) vs housed populations, and compares COVID-19 mortality between the two groups, as well as other findings. These are original, and timely findings. Likely of interest to CMAJ readers given the high volume of services used by homeless populations, as well as the significant concerns expressed previously by health care services and professionals about the risk of homeless populations during the pandemic. The findings in regards to positivity and mortality are crucial feedback for institutions and clinicians that deal with IARH. Prior studies examining these avenues have been weak and somewhat limited. Those that exist typically look at outbreaks in individual shelters. This appears to be the first to examine province-wide populations. Very minor recommendations: • Page 8 lines 2-3: "non-AHRI" change to IARH • Page 8 lines 17-21: unwieldy sentence, please adjust • Page 19: Figure 1: ALC = Assisted living centre (needs to be written somewhere) • Pages 20-22: Figures 2abc: circle area represents LHIN size? Needs explanation **Thank you for your feedback and recommendations. We incorporated all suggestions into the resubmission.**
Reviewer 3	Clarence Dale Guenter, Dr. Guenter
Institution	North Hamilton Community Health Centre, McMaster University, Hamilton, Ont.
General comments (author response in bold)	1. Figure 1 centre boxes look as though there are addition errors. Under Excluded, Exposed, should this be 844+531 rather than 844? Should the term "eligible" be "ineligible"? **Thank you, this was an editing error. We have revised this figure in our resubmission.** 2. Figure 2a-c. What is the meaning of the size of the coins? You say decreasing

	population rate of individuals at risk of homelessness (x-axis). Is that also what the size of the coins is? I don't think so becuse they do not decrease toward the right. **The size of the coins, or bubbles, represents the size of the IARH population (expressed as a rate of the overall regional population). Following editorial and reviewer comments, we removed regional-level results from our resubmission.** 3. Final paragraph of results, you twice use the grammer "XX-fold rate". I think this should read "XX-fold higher rate" **We altered the wording of our resubmission to avoid this wording altogether and instead refer to "X times more/less likely", when applicable.** 4. Under limitations, what is the impact on your results of not including people who are eligible but do not have OHIP (many homeless people who do not have ID but would qualify if they did)? Is there an estimate of what proportion this might be? **We agree that our inability to include individuals without OHIP coverage is a limitation to our study. The other limitation is that our case definition depends on individuals having health care encounters with institutions reporting on homelessness (hospitals, essentially). The general impact of these factors is that our IARH denominator (and subsequent numerators) are underestimates, but the balance between the two are believed to be approximately correct. That said, we know from media coverage and City of Toronto public data that there have been outbreaks in certain Greater Toronto Area-based shelters serving refugee populations (4), which would not have been included in our results. The hazard ratios presented could be affected to the extent that homeless refugees are disproportionately impacted by COVID-19 relative to housed refugees. Unfortunately, we are unable to quantify any such impact because we do not know the total number of housed vs homeless refugees without coverage in Ontario. We discuss this limitation more fulsomely in our resubmission.** 5. Finally, what might the effect be of late entry of COVID testing data into databases? How prompt has this been? When was a test that provides data in May likely to have been taken? **Our outcomes are based on date of occurrence (ie. date of test sample, for COVID-19 testing; date of admission, for hospitalization and ICU usage; and date of death for COVID-19 related death) rather than date of reporting. Therefore, testing in May, for example, represents tests taken in the calendar month of May. It is true that there exist lags to receipt of this data, however. ICES internally determined that a lag of 14 days (for COVID-19 testing), 1 month (for mortality data) and 10-12 weeks (for hospitalization and ICU data) was needed for complete data. It is for this reason that we limit our observation window at the date of final analysis to data older than 10 weeks.**