The authors note the (well known) global threat from antimicrobial resistance (AMR) in the introduction. It would be useful, if possible, for the results investigated factors that might contribute to AMR. I offer a couple suggested additions. Could the authors examine repeated prescriptions in a short timeframe of the same antimicrobial to the same person? Or sequential switching from one antimicrobial to another for the same person in a short timeframe? It would be useful to see some of these trends over time.

This would be a very interesting analysis. While outside our main goals for this study, it would be an excellent area for further investigation. We may include in future analyses of the Pharmacy Network data.

There appears to be mixing of results into the discussion. I would suggest rewriting some discussion paragraphs to move results to the results section (Examples: Page 16, lines 49-54 report novel p-values and exact FSA rates not seen in the results section, or the repetition of results on page 16, lines 3-9 can be removed).

Amended. All novel data reported in results and removed from discussion.

Figures 2 & 4 seems to show rates for 2-year periods, where the axis label seem to overlap. I assume the data do represent individual calendar years, but are offset (e.g., Aug. 2017 through July 2018, or similar), and if that is the case, the figure should clarify this in the label or a caption. If the data actually represent overlapping, adjacent timeframes, I suggest changing the figure to have each data point be a single, nonoverlapping calendar year.

The data represents offset, individual calendar years, as stated. Caption added.

The inclusion criteria do not seem to be described in the methods. How were drugs identified for inclusion? ATC codes? Drug names? This should be elucidated.

Drugs were identified by ATC code. Comment added to clarify. Appendix attached.

The inclusion of long-term care (LTC) facilities is helpful, but I was expecting more in the results about it. LTCs are briefly mentioned in the limitations paragraph and a future study is planned, but it would be helpful in the first paragraph of the results to describe what proportion of antimicrobials were prescribed by LTCs to better understand the sample of prescriptions in the present study.

1.8% of prescriptions were dispensed to patients in LTC facilities (Table 1 and Results – Paragraph 1). A project with this sub-analysis of LTC prescriptions is currently underway with our research group.
Reviewer 2: Ms. Fiona Chan / McGill University Department of Epidemiology Biostatistics and Occupational Health

Background: While the motivation behind this research work is provided in the research protocol in the appendix, much of it should be included into the actual paper, rather than as a standalone. The information of thorough but would summarize and focus points to cater to the present study.

More details regarding the motivation of our work was added to our manuscript.

Main text intro, line 10: The sentence seems incomplete.

Reworded for clarity.

Line 15: unclear what CompuScript and IQVIA data lack - more appropriate to speak to the shortcomings of their findings (eg. overall sales data, specific sample of population, not population-adjusted?).

Added descriptions of shortcomings of IQVIA data and our belief regarding their limited applicability to the NL population.

Methods: Methodology paragraph from appendix should be changed to past tense and also be moved to main text. Also NLCHI and MCP were not defined.

This was removed. Added definition for NLCHI in methods section.

While the data is rich and authors were able to describe antibiotic use in this population with a lot of granularity over time, I disagree with the labeling of this study as a “cohort study”. A traditional cohort study has clear exposed/unexposed groups. This study would be better labelled as a descriptive study.

Amended, labelled accordingly.

Were all prescription records obtained or only prescription records for antibiotics? Please specify. If the former, would it be possible to describe the proportion of overall prescribing that are Abx? Or number of unique patients who were prescribed Abx?

Prescription records only for antimicrobial agents were extracted then exclusion criteria was applied. Comment added to reflect same.

Proportions of these can be calculated from Table 1, if desired. We did not think this necessary to mention in our manuscript.

In research protocol, the background was provided in terms of family physician’s prescribing of Abx, but in the research manuscript it is unclear if only family physicians were included or if all physicians (regardless of specialty) were included. Please specify.

Includes all physicians, regardless of specialty. Added to Methods section.

Results: Structure of the results paragraph can be improved, as the majority of findings are present as
independent sentences.

**Some adjustments made to improve cohesiveness of results section.**

Age and sex adjusted results would be more meaningful, esp for geographic comparison (and fig 5). Certain demographics may be more likely to reside in rural areas and may influence rate of Abx use.

**Comment added regarding age/sex standardization. Appropriate figures were age and sex standardized.**

Majority of decline driven by the youngest age group with moderate decreases for those <65. A lot of up and down in the oldest age groups and would be difficult to draw definitive conclusions (may be driven by severity of influenza/respiratory diseases for each given season - need to comment in discussion)

**Comment added to reflect in study limitations.**

Line 54-55: sentence unclear.

**Reworded for clarity.**

Figure 6 is difficult to contextualize. Would suggest presenting average prescription rates in quantiles (deciles?).

**Amended. Presented in deciles.**

Please comment on why the rate from previous reports were so different compared to the current findings.

**Previously addressed in committee comments 5, 12, 16**

Contextualize current results – are the Abx rates high, durations of use longer? Would better support argument that these should be targets for stewardship. Would argue that, given the limitations of this descriptive study and inability to account for different factors (patient status, physician practice characteristics), that further work is needed in order to say which high-rate prescribers” and “high-rate inhabitants”

**Comments added to add context to rates and durations. We do not specify these prescribers or inhabitants as high-rate, we identify that high- rate prescribers and high-rate inhabitants as potential targets for intervention. We agree that practice characteristics and prescription appropriateness are needed to classify them as high-rate.**

First sentence of methods reads like the prescription records are retrospectively captured by the pharmacy network, which I don’t think was the case. Please edit for clarity.

**Amended from “retrospectively captured” to “captured”**