Reviewer 1: Martin Dawes
Institution: Family Practice, UBC
General comments (author response in bold)

INTRODUCTION

1. This is written clearly and contains a review of the current situation
We thank Dr. Dawes for his time reviewing our manuscript and providing his comments.

Page 4 line 28 – the evidence for these drug categories is equally robust, and perhaps in some cases more robust. The effectiveness for some outcomes is perhaps less.
ACEIs and calcium channel blockers have shown to be similarly effective first-line options in reducing mortality and cardiovascular events compared with low-dose thiazides.[1] However, the evidence for their effectiveness have been graded as lower quality compared with the evidence for thiazides. The authors of the Cochrane review on first-line drugs for hypertension concluded:
"First-line low-dose thiazides reduced all morbidity and mortality outcomes in adult patients with moderate to severe primary hypertension. First-line ACE inhibitors and calcium channel blockers may be similarly effective, but the evidence was of lower quality."[1]
To be more precise in our language, we replaced "not as robust" with "have been graded as lower quality."
1. Wright JM, Musini VM, Gill R. First-line drugs for hypertension. Cochrane Db Syst Rev. 2018;2018(4):CD001841) (p. 3)

3. Page 4 line 54. Sprint also demonstrated significant harm and was the subject of quite intense discussion, Implementation tools such as RxFiles still carry both sides of the discussion in their evidence https://www.rxfiles.ca/rxfiles/uploads/documents/SPRINT-BP-Trial-Overview.pdf. This was not the case for studies of ACE inhibitors for example.
We agree – clinicians are encouraged to consider both the potential benefits and harms. We added the following text:
"…though careful consideration of the potential benefits and harms of intensive BP treatment is encouraged.[5,10]" (p. 4)

4. There was not a clear hypothesis, and this made interpretation more difficult.
We revised the final sentence of the Introduction:
"In this study, we aimed to describe trends in antihypertensive drug utilization in British Columbia (BC) over a 16-year period from 2004 to 2019, and compare patterns of discontinuation and switch or add-on therapy in incident users of antihypertensive drugs." (p. 4)
In the Methods, we added a text fragment on the null hypothesis for the second part of the study:
"… where the null hypothesis was no difference between the initial drug class groups."

We note that the first part of the study described trends in antihypertensive drug utilization. We did not test for differences in trends between different periods. (p. 7)

METHODS

6. It is not clear why the age cut offs were applied. This should be expanded on within the methods.
We added a short sentence in the Methods section:
"Individuals under 30 and over 75 were excluded as young- and late-onset hypertension are associated with secondary hypertension due to conditions such as renovascular disease and hyperaldosteronism.[2,16]" (p. 5)

7. Was any cancer an exclusion criteria and if so why?
We added a description in parentheses in the Methods section:
"anticancer therapy associated with the development of hypertension [17]…" (p. 6)

8. Clear definition of the limited data elements was very helpful as was description of analytic methods
Thank you for your comment.

RESULTS

9. It would be helpful to remind the reader of the population
We added a description of the source population to the beginning of the Results section. (p. 8)

10. In adult patients in BC aged 30 to 75 with ongoing health coverage the overall prevalence ……
We added a description of the source population to the beginning of the Results section. (p. 8)

11. I enjoyed reading the results section, but I like numbers. The graphs were less helpful – you are missing some legends. There are clear messages about changes in drug prescribing but they are obscured. I wonder if pie graphs at three time points might be an easier way for a reader to see the changes – but these are unadjusted which is an issue
We note that figures were updated in response to editorial comments, which we hope addresses the reviewer's concerns.

12. After this the paper became less clear. Because there was no hypothesis it was difficult to see why you were doing some analyses and their relevance. The most clear statement made was about the reduction of initiation of thiazides but this was not an adjusted finding.
In the Methods, we added a text fragment on the null hypothesis for the second part of the study:
"… where the null hypothesis was no difference between the initial drug class groups."
We note that the first part of the study described trends in antihypertensive drug utilization. We did not test for differences in trend between different periods. (p. 7)

13. There are many factors affecting the use of thiazides – gout for example – I am not suggesting there was a change in gout prevalence but this finding could have multiple factors contributing to it. Age certainly is one factor – renal function being part of that. **Thank you. We agree with the comment; however, we decided to focus on the most common factors to which we have access. Subgroup presentation, as the reviewer suggested, was beyond the scope of our study.**

14. I felt the paper from the results section onward could do with significant clarification but am unsure whether the data elements will provide substantial new knowledge. **We reviewed the manuscript again and made some edits. However, without further detail, we are unable to address the reviewer's comment.**

Reviewer 2: Richard Birtwhistle
Institution: Family Medicine and Public Health Sciences, Queen's University
General comments (author response in bold)

1. This paper describes a study of the use of antihypertensive medications (hydrochlorothiazide, ACEIs, ARBs, CCBs and BBlockers) between 2004 and 2019 in BC. The reason was to determine changes in treatment patterns and changes in the use of medication classes given the changes in treatment recommendations over that time. The purpose of the study was to: 1) evaluate trends in antihypertensive drug utilization in British Columbia (BC) over a 16-year period (2004–2019), and 2) compare the risk of discontinuation and switch or add-on therapy in incident users of antihypertensive medications.
The study was done using anonymized, linkable administrative health databases of the BC Ministry of Health. The data consisted of prescription drug dispensing records at community pharmacies, registry data on enrollment in the provincial health plan and demographics, outpatient physician services, and inpatient hospitalizations.
The source population was BC residents aged 30 to 75 years who were enrolled in the provincial health plan between January 1, 2004 and December 31, 2019. Exclusions were appropriate.
The investigators found that there was an increased incidence of drug treatment after the new recommendations for stricter blood pressure targets around 2014. They also found a change in patterns of medication use with a decrease in use of thiazides and increase in use of ACEIs, ARBs and CCBs.
This administrative database study was well done and analysis appropriate. The paper is clearly written and is a useful addition to the literature on the treatment of hypertension in Canada. It clearly demonstrates the clinical impact of treatment recommendations and the decrease in the use of thiazide medication over time. This reflects the trend for clinicians to prescribe newer medications that may result in better hypertension control as well as possible the impact of Pharma on physician prescription patterns.
We thank Dr. Birtwhistle for his time reviewing our manuscript and providing his comments.