Author's response to reviews

Title: Outcomes following Percutaneous Coronary Intervention and Coronary Artery Bypass Grafting Surgery in Chinese, South Asian and White Patients with acute myocardial infarction: Administrative data analysis

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Author's response to reviews: see over
Dear Erica Cruz, Editorial Committee, and Reviewers:

Re: MS: 2127600945942493 “Outcomes following Percutaneous Coronary Intervention and Coronary Artery Bypass Grafting Surgery in Chinese, South Asian and White Patients with acute myocardial infarction: Administrative data analysis”

Thank you very much for the opportunity to revise and resubmit the above manuscript as an original article to BMC Cardiovascular Disorders. We have paid careful attention to the two reviewers’ comments and provided itemized responses below. All new changes are highlighted in blue font in the manuscript.

Editorial comments:

1. Please revise your ethics statement to include the name of the ethics committee that approved your study.

The ethics statement has been revised (pg 8).

Reviewer 1:

2. First of all there is no distinction between STEMI and NSTEMI which is of prognostic impact. There is also no description of patients with cardiogenic shock with the worst prognosis.

We were unable to accurately differentiate STEMI and NSTEMI with our database. There were too few patients with cardiogenic shock (ie. <5 patients in many of the ethnic groups) for any meaningful sub-analysis for those patients.

3. Severity of coronary artery disease is based on Duke (CAD severity Index) Criteria - where is the reference for that?

Thank you. The following references have been added:


4. Looking at the results I'm astonished about the number of patients treated with CABG (23%), muchmore than described in the literature!! The number of patients who require CABG surgery in the acute phase of STEMI is small (5-10%), but may be indicated. Timing of acute surgery seems to be of great importance to get good results with a low mortality and a low complication rate. According to the Guidelines, CABG is recommended 3-7 days after AMI. Please clarify - emergent CABG, immediately, .... ?

We have clarified in the manuscript that the proportion of patients undergoing CABG included all patients who were treated with CABG within a year from their AMI (page 9); hence the large percentage. However, the percentage of patients treated with CABG within 7 days from AMI was 3.7% among Chinese, 3.8% among South Asian and 2.7% among White patients. The number of those treated with CABG within 30 days post AMI was 7.5% among Chinese, 9.8% among South Asian, and 7.4% among White patients. Given the small number of patients undergoing CABG after 7 days or a month, we were unable to do a sub-analyses due to lack of statistical power.

5. Please describe the used term “cardiac dysrhythmia” – is it atrial fibrillation?

Cardiac dysrhythmia refers to any atrial or ventricular arrhythmia. We have clarified this in the manuscript (pg. 6)

6. Discussion: “This difference may be due to the fact that our population was a post AMI population compared to a lower risk unselected coronary disease population in the study above”. As mentioned in title it is an acute MI population !!!

We changed the term to AMI and deleted “post.”

7. Chinese patients (PCI group) had significant more cardiovascular risk factors like hypertension, diabetes, what about the lipid profile, a major CV risk factor ??

Dyslipidemia is poorly coded in administrative data so could not be used. We have now included that limitation in page 12 of the discussion. However, we used the Tu mortality prediction rule variables following AMI that was validated for 30-day and 1-year mortality displaying reasonable accuracy (areas under the curve was 0.78 and 0.79 for 30-day and 1-year mortality, respectively).

8. Last paragraph – conclusion

“This hypothesis generating signal raises concern for the effectiveness of revascularization procedures in these ethnic groups following AMI. Further studies are needed to confirm this finding.”

The effectiveness of revascularization procedures is well documented all over the world. The main problem seems to be the adherence to the medication, the delay at arriving in hospital for an adequate therapy, different ethnic groups, .... This should be discussed more extensive “Further studies are needed to confirm this finding” is neither helpful and nor of interest for the reader.
Thank you. We have revised the conclusion paragraph as per reviewer’s suggestion (pg. 13).

**Reviewer 2:**

9. *The data were assessed from 1999 to 2003. The FU would be up to 10 years but the authors describe a maximum FU of 4 years? Please explain.*

Patients were followed up for a maximum of 4 years given that only data available were those collected between 1999 and 2003.

10. *The absolute number of outcomes with patients groups is not reported and should be added.*

This information has been added to the results section (pg. 9,10 under “Outcomes”).

11. *What was the definition of MI? Did the definition change during this study? How did the authors define MI? How many had NSTEMI and STEMI?*

AMI definition was based on ICD 9 coding that has a positive predictive value of 95% (91% to 98%) identifying the physician’s diagnosis of acute myocardial infarction from hospital charts. This validation information of the MI has been added with the below reference (page 6). We were not able to differentiate NSTEMI from STEMI.


12. *Most patients with MI were treated with thrombolysis in 1999. Did the authors analyse patients and their outcome after thrombolysis?*

We did not evaluate for thrombolysis, as these data were not available.

13. *It remains unclear to the reviewer how differences in baseline characteristics were corrected for? Which lever of difference resulted in inclusion of a individual parameter in a multivariate model.*

We used a risk adjustment method whereby apriori defined covariates were all entered in the regression model. The apriori defined covariates were described in the methods section (please see section ‘other prognostic variables’ for details, pg. 6 and 7). Briefly, to control for severity of illness on admission between ethnic groups, we adjusted for clinical variables from the Tu et al (2001) AMI mortality prediction rule validated for hospital administrative data. These variables and age, sex, socio-economic status, distance to the nearest hospital, duration from the diagnosis of AMI to a revascularization procedure were all included as covariates in our multiple regression models.
14. Are the results derived from fully adjusted statistical models? Did the authors perform sensitivity analyses?

The results were derived from the fully adjusted models (please see section ‘other prognostic variables’). Additional analyses other than the ones described in the manuscript were not performed.

15. Background: The authors state that „in patients with AMI whose coronary anatomy appears unsuitable for PCI, CABG is indicated. However, some patients have to be treated conservatively according to patients and anatomical characteristics. This should be added.

Thank you. The introduction section was modified to include the statement in the reviewer’s comment (page 4).

16. Ethnicity data do not result from self declaration. This is a severe shortcoming considering that the number of patients in the smaller groups is rather limited.

We agree with the reviewer that self-reported ethnicity is a more robust way of collecting ethnicity data. However, self-reported ethnicity data were not available in the administrative data set given that in Canada ethnicity data are not routinely collected at hospital admission. Consequently, we defined South Asian and Chinese ethnicity using Nam Pehchan computer program and Chinese surname list, respectively; both of which are programs exhibiting high sensitivity and specificity (for details, please see ‘defining ethnicity’ section).

17. Baseline characteristics are severely different between ethnical groups. Thus, confounders that remain despite statistical adjustment may invalidate results.

Robustness of our analyses was ensured by adjusting for demographics and clinical variables from the Tu et al (2001) AMI mortality prediction rule validated for hospital administrative data. The results of our analyses indicate that ethnic differences in respective outcomes persist over and above the adjusted demographic and clinical variables.

Once again, thank you for the reviewer comments that we hope have improved this manuscript. Please do not hesitate to contact us if you have any further comments or concerns.

Yours sincerely,

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