Reviewer's report

Title: Acute coronary syndrome in Quebec: Regional and temporal variation in the management and outcomes

Version: 1 Date: 3 February 2006

Reviewer: Alain G Bertoni

Reviewer's report:

General
This report assesses the variation in acute coronary syndrome (ACS) incidence, management with invasive cardiac procedures, coronary re-hospitalization, and coronary death in Quebec, Canada, by health-care administrative region.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
What is the time period of follow-up? It is not clear from presentation if extended to end of 2000. The concern is that persons with ACS in the last quarter of 1999 would have no data on 6, 9, 12 months of follow up (and in fact only those admitted in first week of 1st quarter would have 12 month follow-up).
How was CV death assessed? It is not clear if required hospitalization, or whether death certificates were retrieved and reviewed.
The impact of the decision to include catheterization in definition of "invasive procedure" is not evident until the discussion. Was there a regional difference in revascularization? Not all who have a catheterization will be found to be candidates for revascularization, or will be offered it.
The discussion of the cartographic methods and the clustering, is difficult to follow. This should be reviewed by a statistician with experience in this field. Furthermore, the maps aggregate the data at the level of administrative region, so was cartography and analysis of clusters necessary at all? Furthermore, these maps are difficult to understand. Which color is optimal (lower than expected deaths?) The importance of the Hospital symbol in these maps is also not clear. Could the same results not be presented in tabular format? If the authors wish to retain the maps, this will need to be greatly clarified.
The hypothesis tested, more procedures by region would lead to less mortality, was shown quite some time ago by Tu, Pashos et al, NEJM 1997, not to be necessarily so (comparing Ontario vs. US). Is there compelling evidence in the literature that this is a reasonable hypothesis to make? Your data suggest (line graphs) that the largest determinant of procedures, re-admission, and mortality, seems to be the initial data-point. The curves appear to be largely parallel between months 3 and 12.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
It would be helpful if Table 1 also incuded age-adjusted ACS rates.
Figure 5, there is a reference to 3 groups in legend, when there appears to be 4.

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Discretionary Revisions (which the author can choose to ignore)
Page 6: "We hypothesize that regions with easy access to specialized cardiology centers, such as metropolitan regions, will have a greater proportion of invasive cardiac procedures, than remote regions, thus necessitating fewer elective readmissions and, consequently, leading to fewer cardiovascular deaths" The way this reads, elective readmissions lead to CVD death.
Also, it is clear from your discussion, that you could not differentiate type of readmission (elective vs non), so you may wish to rephrase this.

**What next?**: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

**Level of interest**: An article whose findings are important to those with closely related research interests

**Quality of written English**: Acceptable

**Statistical review**: Yes

**Declaration of competing interests**:

I declare that I have no competing interests.