Reviewer’s report

Title: The occurrence of adverse events in relation to time after registration for coronary artery bypass surgery: a population-based observational study

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Reviewer: Jean-Francois Legare

Reviewer’s report:

Well written manuscript that was easy to read and of clinical relevance to health care systems in which wait times are used to manage resources. The major strength of the observation is that it was based on more than 12000 patients stratified for surgery. At the same time its major weakness is the lack of important information on many relevant clinical risk factors that are known to impact on patient outcomes in CABG surgery populations. Furthermore the final conclusions are based on less than 100 events (32 in the proposed higher risk group) making the robustness of the observation subject to skepticism.

1. Analysis of the urgent patient may be problematic as presumably many of these patients were admitted to hospital. This would mean that their risk of death or more urgent surgery carefully monitored by clinicians on a daily basis something that was not possible for the other groups of patients. As such estimates of risk while waiting cannot be uniform between groups outside of urgency status. Perhaps the analysis should be done without urgent patients. In fact in figure 2 it appears that urgent patients may be waiting well above their standard of 1 week suggesting that their status may have changed or something about their clinical condition be different.

2. The major conclusion of the manuscript suggests that non-urgent patients have a greater risk of death while waiting and this is likely related to their longer wait times. This should be explored in more details by the authors to strengthen the position as it has tremendous clinical implications.
   a. For example most of the deaths in both groups were observed in the first 25 weeks. Does this suggest that this is a threshold that warrants obligatory re-evaluation?
   b. Why is the risk of death over time different between non urgent and semi-urgent in figure 2 (slopes of the curves). Does this suggest that the population of patients is different?
   c. In the first 25 weeks the curves do not appear to be statistically different but are still divergent. Again this suggests that there is something inherently differently about the patient not something different about their waiting. Should this be the case it would make the conclusion that non-urgent patients are at greater risk of death correct but not due to their increased waiting as suggested by the authors.

3. Figure 2 the second graph should not include urgent patients as these again
should be difficult to compare to the other two groups based on their short time waiting and highly subject to their clinical presentation.

4. The statistical analysis appear very well done but given its complexity would require the expertise of an analyst to ensure accuracy of the techniques used and conclusions made. As such some of the methodology is difficult to follow and would benefit from simplification for a non expert reader

5. It is stated that 104 patients died while waiting but only 99 were used for the analysis (please clarify)

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

Nothing to declare