Reviewer's report

**Title:** Demographic determinants and effect of pre-operative angiotensin converting enzyme inhibitors and angiotensin receptor blockers on the occurrence of atrial fibrillation after CABG surgery.

**Version:** 1  **Date:** 13 August 2009

**Reviewer:** Jeff Healey

**Reviewer's report:**

The authors have submitted a large retrospective analysis examining the predictors of post-CABG atrial fibrillation. Post-operative atrial fibrillation is an important clinical problem and research in this area is relevant to a wide range of physicians and surgeons. The authors demonstrate an association between age and a history of hypertension with the development of post-CABG atrial fibrillation. This is important as these are the two most important risk factors that predict atrial fibrillation outside of the surgical setting. They also explore the role of ACE inhibitors, ARB and beta-blockers on the development of atrial fibrillation and find little, except for a trend with ARB medications.

The authors should be congratulated on assembling this large dataset. They do have important findings for the reader: specifically that non-surgical predictors of atrial fibrillation (age, hypertension) also predict post-operative atrial fibrillation. As well, the impact of atrial fibrillation on length-of-stay, although not novel, is still important. However; the authors speculate too much on borderline p-values and sub-group analyses which detracts from the paper. They would be well-served to remove or de-emphasize much of this and conduct a formal multi-variate analyses to define predictors of atrial fibrillation and the independent influence of various medications.

**Major points.**

1. Any difference between on-pump and off-pump cases?
2. It is not conventional to do a sample size calculation for a retrospective study, as the confidence intervals of the result will provide an indication of what treatment effect can be excluded. That being said, it does not take away from the paper to include it. However; the authors should state that their sample size of 757 really reflected 2 years of eligible patients at their site.
3. The authors should avoid duplicating data (i.e. Table 1a.) They can state what the significant predictors were, but should take the standard deviations and p-values out of the text and leave just in the table.
4. In many places, the authors significantly over-emphasize the importance of statistically insignificant results. This should be avoided. This is particularly true for the abstract.
5. While the two sub-groups explored (DM, HTN) are important, the authors
should state in their methods section if these were defined a-priori, as this would strengthen their relevance. Similarly, in the methods section, ARB/ACE are considered together; however, in the results they are separated. Too much weight given to sub-group analyses and borderline p-values in this manuscript, which is potentially misleading. The most robust findings of this analysis is the association of age and hypertension with post-CABG atrial fibrillation. These are important findings. However; beyond these, additional “findings” are purely speculative.

6. It appears that the authors really did not do a formal multi-variate analysis, which is really what needs to be done here. As well, they mix baseline variables (i.e. age, sex) with outcome variables (days on ventilator, length of stay); the latter which should not be included in a multi-variate model. A better understanding of the effects of ACE/ARB may be obtained using multivariate analyses.

7. The authors need to discuss the negative results of GISSI-AF in their discussion.

8. The conclusion should really not emphasize the sub-group analysis of ARB, but rather, state that ACE/ARB and beta-blockers did not appear to prevent the development of atrial fibrillation (based on multivariate analysis).

Minor grammatical issues.

1. Would avoid the term “angiotensin medications” on page 2 (sample size section). Suggest ACE/ARB, with the short-forms spelled out for the first usage.

2. In same section would say “a smaller relative risk reduction of 15%” rather than a tighter reduction of -0.15.

3. Instead of saying a sample size for the two groups of 120 and 120, would just say a total sample size of 240.

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests