Reviewer’s report

Title: Identification of acute myocardial infarction in patients with atrial fibrillation and chest pain with a contemporary sensitive troponin I assay

Version: 1
Date: 3 March 2015
Reviewer: Chris Pemberton

Reviewer’s report:

This manuscript by Liebetrau et al. addresses an interesting and important issue in troponin measurement as an adjunct to diagnosing MI, that is: confounding syndromes, in this case, AF.

The design of the study is appropriate and well thought out. A derivation cohort (n=90) is used to define potential optimisation thresholds and then validated in a larger independent and non-selected group (n=314).

The cohorts used are well defined and have been the subject of previous publications.

I cannot claim to fully understand the mathematics behind the statistical modelling used, but on first principles, it appears to be sound and appropriately implemented.

MAJOR COMPULSORY REVISIONS

1. As stated above, the statistics is a bit behind my understanding and as presented, that is a major point. The manuscript would greatly benefit from a more complete description of the basis for the models used, especially how the cut-off values were arrived at. I am not disputing the logic or results, merely the underlying principles and what they actually mean in real terms for potential clinical use. This becomes very apparent with Figure 2. I understand what this Figure is saying but it is hard to readily translate this into practical clin. chem. use.

2. It strikes me that percentage presence of AF in the derivation cohort is almost 6x higher than the validation cohort. Does this influence the cut-offs used? One suspects it might, but this is not considered openly in the discussion. It should be as it is clear in Table 1 that there is a much smaller average presentation time (1/2) and lower percentage of Type 1 MI in the validation cohort.

MINOR ESSENTIAL REVISIONS

pg. 7 last line. Please insert reference for benefit of aggressive MI treatment.

pg. 15, line 7: insert "of" prior to AF, i.e. to read "diagnosis of AF [20]."

pg. 15, para. 2, line 4: remove "considerably". 0.04 is not considerably higher
than 0.032.

Table 1: Derivation cohort, Troponin I n=311? Shouldn't this be n=90?

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare I have no competing interests.