Author’s response to reviews

Title: Early inter-hospital transfer of patients with myocardial infarction without a doctor, paramedic or nurse on board: results from a French regional emergency care network

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Marc Sabbe (Reviewer 1): First of all, an interesting paper, especially in times where locoregional networking is essential. However, I am missing a power calculation out of previous publications how many cases should be studied to be sure that there is no inferiority not using MICU for those transports.

Response: As this was a non-comparative, retrospective study, we did not perform a power calculation. However, no patients died and only 2/591 patients required a retransfer to the PCI centre for coronary angiography due to stent thrombosis, which is only 0.3%. We have calculated the 95 confidence
interval for this (0.1–1.4% using the Wilson method) and added this to the manuscript. It is not easy to compare this result as the study assessed both the safety of a return journey without MICU and a sooner than usual return.

In addition, as the problem is simple and clear, the discussion can be made shorter

Response: We have shortened the discussion.

Fernando Rosell-Ortiz, Ph.D, MD (Reviewer 2): Early inter-hospital transfer of patients with myocardial infarction without a doctor, paramedic or nurse on board: results from a French regional emergency care network.

Comments
The paper is interesting, especially due to the difficulties to find an adequate balance between needs and resources to delivery best treatment to all the population. Patients suffering ACS have very different risk profiles, so if we can identify patients without risk to be transferred in a MICU without doctor on board, these resources could attend other time-dependig processes (stroke, major trauma, cardiac arrest, heart failure, etc). But there are methodological issues to be considered before acceptance for publication.

Background
There is a confuse mix of patients, STEMI patients before and after PCI are completely different. NESTEMI patients have a broad spectrum of risk. Both categories must be commented by their own and explaining this concern. Indeed it is the strength of the article, what profile of patients could be the target of the protocol. I should suggest to describe how STEMI patients after PCI and low-moderate risk NESTEMI patients remains without a clear transfer protocol.

Response: Figure 2 and the associated text describe which patients are eligible for SCA-Alp transfer. We have clarified both the text and figure. Basically, intermediate-risk NSTEMI patients were eligible for SCA-Alp transfer to and from the PCI centre; STEMI patients were transferred to the PCI centre by mobile intensive care unit (MICU), and intermediate-risk STEMI patients were eligible for SCA-Alp transfer back to the remote hospital. The third paragraph of the discussion further clarifies how the risk levels of STEMI and NSTEMI patient risk can be defined in relation to the appropriateness of the SCA-Alp protocol.

There different risk scores to define the profile of ACS patients. Perhaps we miss some comment about them.

Response: Indeed, the definition of patients eligible for the SCA-Alp protocol needs to be further discussed. We have added a paragraph in the discussion section: “Of course, risk levels may be better defined using scoring systems such as the Global Registry of Acute Coronary Events (GRACE) [16]. Although this may provide a better risk estimation, our physicians felt that this would be more complicated. The use of GRACE could be studied in a future analysis.”

As the paper evaluates a retrospective cohort of patients, I miss just before the aim of the study some explanation. "In our area patients with intermediate-risk ACS are transferred only with trained drivers equipped with an automatic external defibrillator, and without a medic or paramedic on board". Our aim is…clinical outcomes.
Response: We have reordered the last paragraph of the Background as you suggest, and added some further details.

Methods
There is a major concern. Authors write "The aim of this study was to compare the rate of events associated with the SCA-Alp approach compared with the standard approach, which involves a MICU" but the study population only includes patients transferred with SCA-Alp protocol, so it is no possible such a comparison. (Fig 1)

Response: Thank you for pointing out this mistake. We have altered the text to make it clear that we only studied the adverse outcomes associated with SCA-Alp, and did not compare them to MICU transportation.

We miss comments regarding risk scores for ACS patients. It is possible to use another criteria but at least one comment regarding why not to use them.

Response: Indeed, the definition of patients eligible for the SCA-Alp protocol needs to be further discussed. We have added a paragraph in the discussion section: “Of course, risk levels may be better defined using scoring systems such as the Global Registry of Acute Coronary Events (GRACE) [16]. Although this may provide a better risk estimation, our physicians felt that this would be more complicated. The use of GRACE could be studied in a future analysis.”

I do not understand very well the endpoints and their relationship with a transfer protocol. If the aim of the study is to report clinical incidences due to a different transfer protocol, patients usually transported with physician on board now only with drivers, just clinical events on going are the real endpoint. All the other events can be related to an inadequate return decision (too early? instable patient?), but I do not think that in-hospital events after return were different from a MICU transport ones. From my point of view, in-hospital evolution is independent from transfer protocol except if there is any complication during the transfer (an acute event missed or untreated by drivers). If after arriving at hospital, patients were stable, posterior complications cannot be explained by the transfer protocol. I mean, the study describes (it is really a descriptive paper) clinical events of ACS patients at low-moderate risk in a program of early return with drivers and without monitoring, nurses and doctors. (Table 1). (I,e, stent thrombosis is independent of any kind of transport).

Methods must be reconsidered.

Response: The SCA-Alp protocol not only involves transportation without a physician or nurse on board, it also returns patients to the remote hospital sooner after PCI (<12 hours for NSTEMI or 24–48 hours for STEMI instead of 48 hours for both). Therefore, we needed to find an endpoint that would ascertain the safety of returning patients more quickly after PCI. Therefore, events that occur in the remote hospital during the time that the patient would otherwise have been in the PCI centre are relevant. Before describing the SCA-Alp protocol in the Methods, we have added a sentence about the standard approach to make it clearer how SCA-Alp differs from standard: “Prior to the introduction of SCA-Alp, high- and intermediate-risk patients would have been transferred by MICU, low-risk patients by regular ambulance; and they would have remained in the PCI centre for 48 hours after PCI.”

Results, discussion and conclusions
Due to a confuse aim and methods, results describes a pool of characteristics (very interesting, no doubt) that are not addressed with the aim, so the final conclusion is really a pool of conclusions.
Probably, the strength of the study is that an adequate risk stratification may considerer to transfer an ACS patient without physician on board.

Response: We hope that the aim and methods are now clearer. We have removed some of the baseline data.

Authors must choose: early transfer is safe (in general, including all the patients (MICU and ACS-Alp) and their clinical risk conditions, a lot of work) or no problems with return according SCA-Alp protocol (define methods and results according to this purpose).

Response: As mentioned previously, the SCA-Alp protocol not only involves transportation without a physician or nurse on board, it also returns patients to the remote hospital sooner after PCI (<12 hours for NSTEMI or 24–48 hours for STEMI instead of 48 hours for both). Therefore, we conclude that the whole SCA-Alp protocol (no physician/nurse and early return) is safe. We have clarified this throughout.