

RESPONSE TO REVIEWERS

Reviewer 1

The aim of this Paper is to review the evidence on Right heart catheterization in various clinical scenarios of patients with Heart Failure.

We thank the Reviewer for the time and efforts invested in the revision of our manuscript and the useful comments provided.

The paper is a bit confusing and above all the objectives are not clear.

The introduction is too short, and the purpose of the review is unclear.

We thank the Reviewer for the comments. Accordingly, we have revised the introduction and clarified the purpose of our review. Please refer to the revised version of the manuscript.

Why do the authors do this review? What do you want to focus on?

We believe that RHC is an important tool for HF patients and that recent evidence and debate, particularly in the setting of HFpEF and Cardiogenic shock is relevant for practice. RHC contemporary role in HF is limited acknowledged in recent documents and guidelines and we did not find comprehensive reviews addressing this topic, therefore we decided to comprehensively assess the literature available on RHC in acute and chronic HF patients. As reported in the manuscript heart failure in its various clinical scenarios still implies relevant clinical issues from the diagnosis to the management of therapy and RHC represents an important tool to support but is invasive, sometimes performed without uniformity and underused in the daily practice. For these reasons we reviewed the evidence on RHC from the technique to the application in HF patients, including the role for prognosis that in last few years is re-emerged particularly for Acute HF and Cardiogenic Shock patients. We have clarified these points into the revised version of the manuscript.

Even in the conclusions this is not evident.

We thank the Reviewer for raising this point. Accordingly, we modified the conclusion to make it more clear as follows: *"HF, in its various clinical scenarios, poses still relevant issues in terms of incidence and prevalence, diagnosis, therapeutical management and prognosis. RHC is the gold standard diagnostic test for PH, however, in its various approaches (at rest, after exercise or stress, in the cath-lab or at bedside) it has even a crucial role in the various clinical settings of patients with HF. Indeed, by allowing a comprehensive understanding of the patient's hemodynamic status, RHC offers precious help for clinicians in diagnosis and management of shock and advanced HF, in LVAD or heart transplant candidacy. Furthermore, it is an essential component of HFpEF diagnostic algorithm. There are however, safety concerns, therefore, it is pivotal to maintain adequate standards in its use. Training in its execution (catheter insertion, acquisition and interpretation of measurements) should continue to be provided to trainee intensivists/interventionalists and nurses, in patients as well as eventually through simulation, but most of all, the selection of the optimal hemodynamic monitoring technique should be guided by patient condition and by the need for additional measurements in the individual patients".*

Figure 2 is a table.

Thank you for this point. Accordingly, we changed it as the new Table 2.

It is not always clear whether the figures are taken from cited articles.

Thank you for this comment. We clarify that all figures are original and drawn by us. The content of the figures is adapted of course, particularly for algorithms, by previous papers. Specifically, Figure 1 and Figure 4 are original, while Table 2, Figure 2, 3 and 5 have been adapted from articles and consensus documents. According to this comment we have now clarified this point in the revised manuscript and provided appropriate references for these algorithms in the captions.

Why are the conclusions after the figures?

Sorry for the mistake and thank you for pointing it out. Accordingly, we moved the conclusion section.

Reviewer 2

Thank you for the opportunity to review this outstanding paper, which offers contemporary insights into right heart catheterization in patients with acute or chronic heart failure. I have a few minor comments and suggestions for your consideration:

We thank the Reviewer for the time and efforts invested in the revision of our manuscript and for the positive and useful comments provided.

In several instances, the decimal points are represented by commas. For example, “<0,01%” on line #258. Could you please replace these commas with full stops for consistency?

We thank the Reviewer for raising this point and we concur with his criticism. We addressed this issue modifying the decimal points according to the Reviewer's suggestion.

I recommend changing the font from 'Comic Sans' to 'Arial' in the tables and figures. Arial tends to be more professional and is easier to read in academic contexts.

We thank the Reviewer for this comment and concur with the Reviewer's criticism. We addressed this issue modifying the figures and tables according to the Reviewer's suggestion.

Regarding the algorithms presented in Figures 3, 4, and 6, could you confirm if these are original concepts developed by the authors? If they are not, providing the appropriate references for these algorithms would be beneficial.

We thank the Reviewer for this important comment. Table 2, figure 2, 3 and 5 have been adapted from articles and consensus documents. According to this comment we have now clarified this point in the revised manuscript and provided appropriate references for these algorithms in the captions.

Reviewer 3

A good quality work, well-structured and explained, with quality imaging and impactful information for the clinician. Congratulations to the authors.

We thank the Reviewer for the time and efforts invested in the revision of our manuscript and for the positive comments provided.