Author's response to reviews

Title: Using the random forest method to detect a response shift in the quality of life of multiple sclerosis patients: a cohort study

Authors:

Mohamed Boucekine (boucekine.m@gmail.com)
Anderson Loundou (anderson.loundou@univmed.fr)
Karine Baumstarck (karine.baumstarck@univmed.fr)
Patricia Minaya-Flores (patriciaminaya1@gmail.com)
Jean Pelletier (jean.pelletier@ap-hm.fr)
Badih Ghattas (ghattas@univmed.fr)
Pascal Auquier (pascal.auquier@univmed.fr)

Version: 3 Date: 14 January 2013

Author's response to reviews: see over
Associate Editor's Comment
"This is an interesting article, though the large number of acronyms can make it somewhat hard to follow. Anything that can be done to increase readability would be helpful."

Authors
As suggested by the Associate Editor, we added a list of abbreviations including the acronyms at the end of the main text (see page 12).
Reviewer: Hiromi KIKUCHI

Major Compulsory Revisions

Point 1
Reviewer
The authors analyzed the variable importance score (VIS) of SF-36 (MCR, PCS, eight subscale and X) in the global MusiQOL index forecast. It seems that the authors can also calculate VIS of each MusiQOL dimension in the global SF36 score forecast. It makes the comparison of RS possible among different diseases.

Authors
We totally agree with this comment. The reviewer proposes to analyse the variable importance score of MusiQOL dimension in the SF36 composite scores forecast in order to make the comparison of RS among different diseases. The comment is pertinent but the aim of our paper was to investigate the RS phenomenon in the global MusiQoL index. However, to consider this comment, we added a sentence in the discussion section (see page 11, line 6):
“Our study investigated the RS phenomena in the global MusiQoL index. It would be of interest to analyze the RS in the SF36 scores in order to make comparisons of the RS among different diseases.”

Point 2
Reviewer
EDSS scores of worsened and not-worsened groups at the baseline are significantly different. The authors can consider the possibility that RS is derived from the worse EDSS score at the baseline. The authors can analyze the data of worsened and not-worsened groups whose EDSS scores at the baseline are matched. If possible, logistic regression analysis seems suitable.

Authors
We thank the reviewer for this pertinent comment. Indeed, the RS detection could derive from the worse EDSS score at the baseline. As suggested by the reviewer, we performed supplementary analyses on baseline EDSS score-matched groups (100 worsened patients and 100 not-worsened patients). This analysis substantially showed similar findings. We can provide these results as an appendix.

To consider this comment, we made changes in the manuscript:
- Analysis section (page 7, line 6):
  “To control the difference in baseline EDSS scores between the worsened and not-worsened groups, supplementary analyses were performed on baseline EDSS score-matched groups (100 worsened patients and 100 not-worsened patients).”
- results section (page 8, line 1)
  “The results of the baseline EDSS-matched groups are detailed in additional figures (additional Figure 1 and additional Figure 2). The findings were globally similar. One discrepancy concerns the not-worsened patients. While the MCS and PCS AVI progressed symmetrically in the entire sample, the 2 curves were close at M12 in the matched groups.”
- we added additional files (additional Figure 3 and additional Figure 4)
We hope these adding address the reviewer’s concerns.

Minor Essential Revisions
Reviewer
It might be better to adopt the same scale in the vertical axes of both figures in Figure 2. It can elucidate the difference of RS between worsened and not-worsened groups more clearly.

Authors
We agree with this comment. We homogenized the figure scales.
Reviewer: Peter Jongen

Reviewer
This paper addresses the detection of a response shift in health-related quality of life in MS patients. Response shift is an important topic with implications for both clinical research and patient care. The statistics used and the related technicalities are fundamental to this work. A full understanding of the papers qualities therefore require a statistical expertise which I do not possess, to my regret.
From a neurological point of view I have no comments. The study is well-designed and the fact that patients were recruited in 32 centres in 12 countries increase the validity of the findings. I suggest to add an appendix indicating the participating investigators and centres.

Authors
As suggested by the reviewer, we added an additional file including the participating investigators and centres (see additional table 1, page 21).