Author's response to reviews

Title: Preoperative risk stratification models fail to predict hospital cost of cardiac surgery patients

Authors:

Akmal M.A. Badreldin (akmalbadreldin@yahoo.com)
Bernhard R Brehm (Bernhard.brehm@onlinehome.de)
Florian Krizanic (f.krizanic@kk-km.de)
Sherif Elsobky (sherif.sobky@gmail.com)
Thorsten Wahlers (thorsten.wahlers@uk-koeln.de)
Khosro Hekmat (khosro.hekmat@uk-koeln.de)

Version: 4 Date: 17 April 2013

Author's response to reviews: see over
Title:
Preoperative risk stratification models fail to predict hospital cost of cardiac surgery patients

Answer to the reviewers:
Thank you very much for this valuable review.
Herein we provide a point for point replay to the reviews.

Reviewer 1:
Comment:
Very well written paper dealing with an important issue. A large number of patients were included, thorough analysis was conducted and results reported in detail.
The discussion chapter is very well done. Current literature, especially publications that stated opposite findings, were interpreted with a lot of attention to significant detail. The authors pointed out a very important fact: mortality risk does not necessarily equal high costs;

Answer:
Thank you very much for this encouraging comment.

Comment:
Suggestions for improvement:
This article deals with a very important issue and hence is certainly well worth being published; in order to continue delivering high quality care economic aspects have to be investigated and concepts have to be developed to apply those. The key question though remains not only: how can these costs be calculated, but more importantly: avoided/reduced.

Answer:
We do agree with you completely. Actually, our manuscript intended to answer a very central question in order to reach the goal of (avoiding and reducing the hospital cost. This question was: can we (through scoring models) anticipate the hospital cost?
If the hospital cost would be predictable with any of the available tools, it could be reduced through modifying the allocation of resources and the organization of the work flow.
Unfortunately, our manuscript did not confirm a satisfactory correlation between risk profiles and costs. However, further investigations in cost reduction must be carried on to find a proper indicator.

Comment:
The discussion would benefit from emphasizing more on patients and their health and well being after receiving hospital care, rather than simply the “financial risk” for the hospital. If a patient passes away, his/her hospital stay is less expensive (and financially more attractive?)
than the hospital stay of a patient who returns to good health after a lengthy (and hence very costly) hospital stay? Beyond that: good outcomes means satisfied patients creating a good reputation for the institution. Considering long-term and mid-term (financial) planning in highly advanced health care centers such as cardiac surgery departments, good outcomes are certainly one of the most influential factors leading to success and financial stability and growth.

Answer:
A very important issue. Of course our efforts to reduce hospital cost should never contradict with our main mission as health care service provider. If we have to chose between more cost and worse outcome, we do believe that there is no physician will save money on expense of his proper practice.

The issue of outcome of health and well being is even more important than the financial aspect. We have no doubt. Actually, we have addressed this issue in much more detailed other studies from our group. We have even introduced new models with more accuracy in (HEALTH) outcome prediction. For this manuscript, we concentrated on financial aspect, which is also of importance although do not come on the first line of priorities.

Reviewer 2:
Comment:
The study by Akmal et al on use of risk stratification as a predictor of cost after cardiac surgery is well written and very interesting and informative, most studies contradict that view and tend to suggest there is a positive correlation between risk scores and ICU stay, hospital stay and cost. The group have published similar work previously (Z Kardiol 2005)

Answer:
Thank you very much for this valuable evaluation. We would see the difference between our results and other studies (including your valuable work) as completing efforts from different point of views rather than contradiction.

Comment:
Although the manuscript is very well written and argued, I have few comments that need to be addressed before the study is publishable.

1. Data from this unit in Germany have showed very prolonged ICU and hospital stay when compared with other studies and with data from our unit. Mean ICU and hospital stay form CABG was 2.5 and 15.5 days respectively and the figures are even higher when valves are included. This suggests that the practice at that unit is at odds with current practice and as the study is looking at cost, this will make correlation with risk scores almost invalid. The desire to discharge patients may be influenced by other factors for example the financial package for the particular operation in that country.

Answer:
We performed this study prospectively. We cared not to manipulate our obtained data by any mean. Our obtained data do not differ significantly from those of any average cardiac surgical unit in Germany. We did not even exclude any risk categories from our patient subset in order
to reflect the average situation in any German unit (except transplantation patients that actually have multi-factorial influences on costs that cannot be compensated in our evaluation).

Of course, we agree that the results of any study must be influenced by the circumstances in the country and sometimes the provinces, where the study was performed. We are no exception from this rule. Also, we would not claim that our results are applicable worldwide without any further considerations. This is, however, the case of any other scientific research excluding the multination studies.

Comment:

2. I think the authors made a good point in in suggesting that most published studies that have showed positive relation between risk score and cost have used unicariate linear regression with significant p value. in most of these studies the Spearman's correlation is between 0.4 to 0.5 is considered significant, the latest study in 2011 from John Hopkins suggested the Thoracic surgeon risk score does predict hospital charges with p=0.01 and Spearman correlation of 0.51. The point the authors make with regards to correlation need to be around 0.8 to be significant is valid and I would like to ask for a statistical review of the manuscript regarding this point.

Answer:

Thank you very much for your comment. We do believe that this point is very vital and central in our interpretation. However, our description of both correlation methods is well referenced and all our reliable statistical sources are accurately cited. We agree with the reviewer that a statistical approval of this manuscript is very important. We are also very sure that this statistical review will be very positive and will support our statements.

Finally, we are very grateful for the very encouraging and positive evaluation of both reviewers.

A. Badreldin and Coauthors