Author's response to reviews

Title: Effects of changes in health insurance reimbursement level on outpatient service utilization of rural diabetics: Evidence from Jiangsu Province, China

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Version: 7 Date: 4 March 2014

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Title: Effects of changes in health insurance reimbursement level on outpatient service utilization of rural diabetics: Evidence from Jiangsu Province, China

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2 March 2014

Dear Armee:

We appreciate this opportunity to revise our paper titled, “Effects of changes in health insurance reimbursement level on outpatient service utilization of rural diabetics: Evidence from Jiangsu Province, China”. The questions and comments raised by the two reviewers are all very constructive. In this revised manuscript, we have responded fully to the comments of the referees. We hope this addresses the referees’ concerns, and we look forward to hearing from you.

Sincerely,
Lu Zhang and Dongfu Qian (on behalf of all co-authors)
Nanjing Medical University & Johns Hopkins University

Responses to Reviewers

We are grateful to three reviewers’ detailed comments and helpful suggestions.

Reviewer #1, Comment 1. Authors’ efforts for the significant revision of the manuscript is duly noted. Most of my previous comments have been addressed adequately. Just a few minor essential revisions to note:
There are still some typo in the current equation (3), e.g. subscript of beta 2. In addition, I am not sure what is the difference between P (described in the text) and P1 (used in the equation). Do you need the subscript.

Thank you for pointing out this typo and related suggestions. We have corrected them in this revised manuscript.

Reviewer #1, Comment 2. To help the readers better understand the estimation results, suggest making reference to the corresponding equation when presenting the tables.

Thank you for the suggestion. We have added them in this revised manuscript (Page
Reviewer #1, Comment 3. I find some of the current tables not presented very well. Suggest reformatting.

Thank you for the suggestion. We have reformatted all tables in this revised manuscript.

Reviewer #2, Comment 1. First, in reference to my previous major comment Q4, there are still remaining issues with the econometric methodology. The current approach of using different base groups in different regressions is not suitable for estimating multiple institutional choices. In fact, discrete choice models can be used in conjunction with the DID framework to provide a more consistent estimate of the policy impact.

Thank you for the comments. It is possible that we did not interpret it well in the last version. The objective of that model estimation is not to find the factors influencing multiple institutional choices but to examine whether the change of outpatient reimbursement rates at every level of health institution can impact on the proportion of utilization of corresponding health institution. Each record in this data reflects the nature and numbers of outpatient utilization of every level of health institution in each year. In other words, it is not the record of each visit by outpatients. The dependent variable in our model is the ratio of visits by outpatients to every level of health institution respectively. The model estimations on the ratio of visits to every level of health institution are independent respectively, and their base group is the corresponding data of 2010 (not other health institutions). So, it is not true for “using different base groups in different regressions”. According to our data, it is suitable for DID model. Sorry for our bad interpretation in the last revised manuscript. We have added the interpretation now (Page 5 and Page 6) and change related word usage (Page 18).

Reviewer #2, Comment 2. Second, in reference to my previous major comment Q5, I asked why it is the case that estimation on outpatient medical expenditure the policy dummies are Diff-amount 2 and Diff-amount 3, while for estimation on health facility choices the policy dummy is Diff-rate. The authors’ explanation is that yearly maximum reimbursement amount is not related to the kind of health institution, thus it should presumably not impact patients’ health facility choices. I do not agree. The reason is simple: if a patient’s health facility choice is constrained by yearly maximum reimbursement amount (because higher level health institution normally has a lower reimbursement rate), then she will most likely change her facility choice when such constraint is relieved by an increase in yearly maximum reimbursement. Likewise, the authors argue that reimbursement rate was different among three levels of health institutions, thus it cannot be used as the policy dummies for estimation
on outpatient medical expenditure. I do not understand why this is the case. Supposedly, in analyzing the impact of medical insurance policies on patients’ utilization behaviors, both the quota (yearly maximum reimbursement) and the coinsurance rate (reimbursement rate) should be taken into account.

Thank you for the comments. We also did not interpret it well in the last version. It is right for that both the quota and the coinsurance rate (reimbursement rate) will impact on health facility choices. However, our data were not permitted to use them in each model at the same time.

As for estimation on outpatient medical expenditure, the dependent variable is yearly total outpatient expenses. Outpatient reimbursement rates were different at every level of health institution and also different at every sample county. Thus, outpatient reimbursement rates cannot be made as policy dummies for model estimation on outpatient medical expenditure.

As for estimation on the ratio of visits to every level of health institution, the dependent variable is the ratio of visits to every level of health institution. Each level of health institution is dependent estimated respectively.

In the last version, we interpreted that “yearly maximum reimbursement amount is not related to the kind of health institution”. This explanation was not exact. We did not meant that it should presumably not impact patients’ health facility choices. We meant that yearly maximum reimbursement amount was not divided into each level of health institution and it was a total mount limitation including all outpatient expenses at three levels of health institutions. When PSM was performed, the two groups (treated group and control group) were divided by the change of reimbursement rate. For example, for the model estimation of village clinics, the control group is Pukou County whose reimbursement rate at village clinics remained no change, and its yearly maximum reimbursement amount also remained no change but all differences of outpatient reimbursement rate between 2010 and 2011 in treated group were 40 or 100 (yearly maximum reimbursement amount was a total mount limitation including all outpatient expenses at three levels of health institutions). Therefore, it is not practicable for using the variable of yearly maximum reimbursement amount when we estimated the model of every level of health institution respectively.

Of course, in this condition, our estimation models may have some limitations due to lack of the quota or the coinsurance rate (reimbursement rate) information respectively. Sorry for our not enough and accurate explanation in the last version. We have added related explanation and limitation statement (Page 11).

**Reviewer #2, Comment 3.**

Third, in reference to my previous major comment Q6, I still do not see the revision in conclusion regarding the interpretation of increase in outpatient expenditure as “improved access to outpatient services”. Nor did I find the discussion on disentangling the concept of “improved access” from
“overtreatment due to moral hazard”. Maybe the discussion is hidden somewhere in the text (the current PDF version of the manuscript is not very legible due to many formatting issues), in which case the authors can help by pointing out exactly where and how the revision is made. The same is true for Q7 regarding the interpretation of non-significant impact on patient health facility choice.

Thank you for the comments. We have deleted the interpretation of increase in outpatient expenditure as “improved access to outpatient services” (Page 9 and Page 11). In addition, regarding the interpretation of non-significant impact on the proportion of utilization of different health facilities, maximum reimbursement amount may make its impact. The increase of yearly maximum reimbursement amount for outpatient visits can induce more patients to visit at the THCs and county-level hospitals, which may offset the attraction from the increase of outpatient reimbursement rates of village clinics. This has been revised in Page 10.