The editors' comments:

1. The paper would merit from native speakers' help in language.

Response: We would like to thank the editors and reviewers for helpful comments on our paper. The paper has been revised accordingly, and the English in this revised paper has carefully been copyedited by native speakers.

2. When revising the paper, please consider following the structure. Please feel free to use different subtitles and make sure they are succinct

Context/background

What was proposed in the 2009 reforms?

What has been achieved since 2009 (with a discussion on why things have turned as they have)?

What should be done now to further progress?

Conclusion

Response: The above structure has been used in the revised paper.

3. You may want to shorten the introduction and briefly introduce the context of the reform. What was the financial protection policy before 2009? Why the 2009 reform on financial protection was needed?

Response: The introduction (now called Background in the revised paper) has been shortened. We also briefly introduce the context of the reform related to universal health coverage and financial protection. Please see Section 2. We have cross referenced Meng et al. 2019 about China's 2009 health system reforms in the same China collection to avoid redundancy.

4. Increasing coverage will increase utilization of healthcare, but it does not equal to better quality. When talking about coverage and financial protection, can authors also discuss health quality? If they do not have the data/measures for quality, could they acknowledge the importance of evaluating it and make recommendations accordingly?

Response: We agree with the editors that quality should be emphasized, while health insurance coverage has been increased and utilization of healthcare has been improved. However, measures for quality in China are very limited, so we acknowledge the importance of ensuring that greater

focus is extended to assessing quality and health system efficiency. Please see revised Section 5: Conclusions.

5. The paper would benefit from a better summary/interpretation of data. For example, it is interesting to know the proportion of OOP change over time, what the impact it had? What the trend suggested?

Response: We have tried to provide better summaries/interpretation of data. For example, Figure 1 shows the proportion of OOP change over time, and we also provide what the impact it had and what the trend suggested. Please see Figure 1 and Section 3.1.

6. Please clarify on terms such as "access", "vulnerable population" "catastrophic health expenditure" etc. in the context of this article to inform BMJ general and international readership. Reviewers gave good suggestions; we hope you find them useful.

Response: We have carefully clarify on terms such as “access” (in Section 3.1), “vulnerable population” (in Section 3.2), “catastrophic health expenditure” (in Section 4.1), etc. Suggestions by reviewers are very helpful, the revised paper has been revised accordingly.

7. The three reasons for insufficient financial protection have some overlaps. Please revise your arguments to avoid redundancy. The authors should also explain why self-referral can generate higher OOP in China since different countries have different systems and payment policies.

Response: We have revised reasons for insufficient financial protection to avoid redundancy, and please see Section 4.1 in the revised paper. We have also explained why self-referral can generate higher OOP in China, and please also see Section 4.1 in the revised manuscript.

Reviewer 1

General comments:

1. In my view, the paper overlooks/ do not put adequate emphasis on one of the main key issues: poor/weak use of the schemes purchasing power to negotiate prices and limit balance billing. The extra amount of money has not translated into financial protection because of the schemes inability to discipline pricing practices of providers. This is too important to be somehow neglected.

Response: We agree with Reviewer 1 that health insurance schemes in China had poor/weak use of the schemes purchasing power to negotiate prices and limit balance billing. The extra amount of money has not translated into financial protection because of the schemes inability to discipline pricing practices of providers. We have added this point into the revised manuscript. Please see Section 4.2.

2. The overall point that through extra money as a solution is 'unfeasible' (unsustainable?) is arguable. If this extra money would have been accompanied by a provider payment mechanism reform, it could have worked. The current level of OOP/CHE is not bigger than in countries that have achieved decent levels of financial protection.

Response: We agree with Reviewer 1 that provider payment reform was not well carried out yet in China and remains a pressing concern. Any investment of additional resources needs to be accompanied by careful design so that the extra money translates into financial protection, especially for the poor. Without appropriate health system reforms, the share of health expenditures in GDP will rapidly increase from 5.3% in 2015 to 9.1% in 2035 (World Bank, World Health Organization, Ministry of Finance, National Health and Family Planning Commission, Ministry of Human Resources and Social Security, 2016). We have revised the text to emphasize that the provider payment mechanism should be designed to promote efficiency and quality, and shift away from the fee-for-service incentives to over-provide non-insured services, refer patients for hospitalization even when their conditions could be treated on an outpatient basis, over-use intravenous drips and antibiotics, etc. This supply-side incentive issue is a system-wide issue, and not confined to the poor. Our recommendations for provider payment reform are for all the social health insurance schemes, not just the proposed safety net program. Of course in addition to provider payment reform, demand-side enhancements such as lower co-payment requirements can be used particularly to protect the poor from experiencing catastrophic health expenditures. We have added this point into the revised manuscript. Please see Section 4.2.

3. I would suggest to include a figure/table describing the schemes main features.

Response: We have added a table to describe the main features of three schemes. Please see Table 1 in Section 2 of the revised manuscript.

4. The paper require in-depth English editing.

Response: The English in this revised paper has carefully been copyedited.

Specific comments:

1. Technically speaking 95% population coverage is not equal to 'universal'. Truly universal are only possible when the entitlements are linked to a sort of automatic (passive) enrolment. So, I would question whether we can say that China has reached 'universal population' coverage.

Response: We have changed the article to say "In 2011 China achieved near-universal health coverage, with more than 95% of the Chinese population covered by health insurance." Please see Section 3.1 in the revised manuscript.

2. Relative high level of OOP do not automatically translate into financial protection issues. For instance, Sri Lanka has 50% OOP out of current health expenditure but no big issues on financial protection. The paper makes a point that high OOP/CHE leads to issues on FP. This is not always the case.

Response: We agree with Reviewer 1 that relative high level of OOP do not automatically or always translate into financial protection issues, although often then do and only systems that have a careful design can have reasonable financial protection while still a high percentage of OOP spending. We soften this point in the revised manuscript, to provide a more nuanced discussion within our length constraint. We believe that high OOP spending is still one of the major reasons for catastrophic health expenses and low financial protection in China (Meng et al. 2012). The OOP/CHE in China was decreasing (Figure 1), but the percentage of resident health expenses in total consumption expenses was increasing (Figure 2). This was another reason for low financial protection, and often led to catastrophic health expenses for the poor.

3. Financial protection can also be tackled by other models. The paper gives only a role for the SHI schemes. What about resources being spent from budget allocations? It should not be ignored.

Response: We agree that SHI is not the only mechanism for achieving financial protection. The total health expenditures in China have 3 funding sources: government budgets, social expenses (mainly social health insurance, but excluding health expenses from government budgets), and

out-of-pocket expenses by individuals, and the shares of above 3 funding sources in 2017 were 29%, 42%, and 29% (National Health Commission 2018). We have added to the paper some additional discussion about China's government spending from budget allocation, such as the investment in building and renovating government primary care facilities, replacing revenues from drug dispensing with some other government subsidies, investing in medical equipment for public hospitals, training and continuing medical education. In fact, China's national health accounts emphasize this government budgetary commitment, listing it separately from "social expenses" and OOP paid by individuals.

4. The terms cost-sharing and co-insurance are used interchangeably. The reader would help using only of them or qualifying the differences. Also, the use of the term 'coinsurance' may be not adequate since most of the beneficiaries are subsidized, thus no paying any premium/contribution.
Response: We exclusively use the term "cost-sharing" in the revised manuscript.

5. The assumption that 25% OOP should still mean issues on FP is not accurate (line 50, page 10). Most European countries have OOP around 20% and they enjoy FP.
Response: This point is very similar to that raised above (Specific Comment No. 2). We have modified the text to take account of the fact that OOP and lack of financial protection are not synonymous, but usually closely correlated.

6. The point on reforming PPM (Lines 31-36 in page 12) should be further developed because it is the critical piece of the reform (far more than targeting).
Response: We agree with Reviewer 1 that the point on reforming provider payment mechanism (PPM) should be further developed. Fee for service is still the dominant in China, which provides strong incentives for health care providers to increase service quantity and use expensive medicines. Revised and improved provider payment mechanisms that better align provider incentives with social value, such as mixed payment systems with health outcome and process of care measures alongside capitation and DRGs, should be employed to cut health care costs and improve health quality. Innovative methods that fit China's context could make the system more sustainable while also enhancing financial protection. Please see Section 4.2 in the revised manuscript.

7. There are sentences that are quite difficult to follow. Examples: lines 40 to 48 in page 8 or line 37 in page 10.

Response: We thank Reviewer 1 for carefully reviewing our manuscript. These sentences have been revised.

Reviewer 2

This paper provides a detailed summary of the current state of financial protection for China's population under its social health insurance system, as the title aptly suggests. It makes the case that despite China's ambitious reforms to achieve universal health coverage, household out-of-pocket expenditure on health remains high and protection against catastrophic health expenses is limited.

Major comments

1. A key message of the paper is that financial protection should be enhanced for the poor and "other vulnerable populations". The authors should clarify and explain what these "vulnerable populations" are.

Response: Vulnerable populations mainly include 4 (sometimes overlapping) groups of people: the poor (low income); the chronically ill and disabled; those disadvantaged by geographical factors (such as residents of mountainous and remote areas, and/or of minority autonomous regions); and the very young (infants, young children) and frail elderly (e.g. over 80 years old). The paper focuses on financial protection to the poor. We have clarified these vulnerable populations in Section 3.2 of the revised manuscript.

2. The URBMI and RNCMS were merged to form the URRBMI in 2016, presumably to address urban-rural disparities in financial protection. Are more recent data available, perhaps on the provincial level, to show whether such disparities have been reduced?

Response: The URBMI and RNCMS were merged to form the URRBMI in 2016, but no national data were available to show the effectiveness of this process of merger (since it was implemented at different rates in different parts of the country). There are some analyses using data from local

areas to study the impact of insurance mergers. A local trial study in Guangzhou City, Guangdong Province showed that the merger of URBMI and RNCMS increased health care expenditures and utilization for the rural population previously covered by RNCMS and reduced the urban-rural gap, but the share of the out-of-pocket amounts in total health expenditures for URRBMI remained fairly high (Huang and Zhang 2017). Please see Section 4.1 in the revised manuscript.

3. A fundamental cause of "inefficiencies in China's health care system" is perverse supply-side and provider incentives increasing the financial burden on patients, as the World Bank highlighted in its 2016 report. The authors point out in their recommendations that it is important to "design a well-aligned provider payment system". It would be helpful to the reader if the authors could explain what they mean here and also include this point in their discussion of why improvement in financial protection has been limited.

Response: We agree with Reviewer 2 that a well-aligned provider payment system is important for China's health system. The dominant provider payment method is still fee for service in China, even if experiments with other forms of payment such as capitation, DRGs, and other provider payment methods have also been recommended by the central government and in the World Bank's report (World Bank, World Health Organization, Ministry of Finance, National Health and Family Planning Commission, Ministry of Human Resources and Social Security, 2016). A well-aligned provider payment system in China is a nontrivial issue to cover, and beyond the scope of our paper; but we do give some hints at what we think the main elements might be. For example, rigorous studies should evaluate the access, quality, and cost implications of implementing mixed payment with nontrivial weight on capitation for family doctors' contracts within the primary care, and DRGs with global budgets for inpatient care, all linked to measures of quality of care processes and health outcomes. But the process of provider payment reform is very slow. We believe the evidence to date suggests that the lack of appropriate supply-side incentives is one of the most important reasons for the rising out-of-pocket spending for insured patients, even if the nominal cost-sharing percentage has been decreasing. Please see Section 4.2 in the revised manuscript.

Minor comments

1. Para. 1, "Introduction" – please explain what "annual inpatient hospitalization rate" means and what the denominator is.

Response: According to China National Health Statistical Yearbooks, the annual inpatient hospitalization rate means the number of hospitalizations in the country, divided by the total number of population. The denominator is therefore the total population of China. This has been clarified in Section 3.1 of the revised manuscript.

2. Para. 1, “Financial protection is relatively weak…” – I couldn’t see how the statement “People had better access to quality services, technology and medicine, and lower probability of not receiving care.” followed from the previous sentence or Figure 1.
Response: This paragraph would like to show financial protection is relatively weak, so we have deleted the following sentence “People had better access to quality services, technology and medicine, and lower probability of not receiving care.”

3. Figure 2 shows that the increase in household expenditure on health appears more marked in rural compared to urban areas. This could be highlighted in the discussion.
Response: In the discussion, we highlighted that the increase in household expenditure on health appears more marked in rural areas compared to urban ones as shown in Figure 2. Please see Section 4.1 in the revised manuscript.

Reviewer 3

This is a helpful and approachable review of the personal finance of China's universal health insurance program, which has undergone rapid changes in the past two decades. Overall, I have no major concerns and think that the fairly straightforward description of national scale data appears appropriate if the data sources are reliable, which I don't have enough information to assess. I do have a few suggestions for what could improve the paper if the data are available:
1. The paper mentions improved "access" many times but there is not much data on actual measures of access. There are measures of utilization and catastrophic health expenses, but not much detail on, for example, what proportion of the population forgoes care due to cost. These data may not be easily available, in which case the authors should be more circumspect about assuming improved access due to increases in utilization.

Response: China does collect some self-reported data about access as measured by foregoing care due to cost; our revised text cites the data from National Health Services Survey that the percentage of people who "needed" hospitalization but did not receive inpatient care decreased from 29.6% in 2003, to 25.1% in 2008, and to 17.1% in 2013. However, in 2013 there were still 13.9% of low-income people who needed but did not receive inpatient care due to economic reasons (costs) according to this measure and survey, and this percentage for the entire population was 7.4%. Costs were still the dominant reason (accounting for approximately 50% of all the reasons for people who needed, but did not receive inpatient care) (Center for Health Statistics and Information 2015). We have added these points to the text, as well as softened our assertion that access is clearly measured or synonymous with utilization increases. Indeed, our emphasis on the need to revise provider payment away from fee for service points to our belief that not all utilization increases are improved access according to "need" but also reflect the incentives of providers as well as patients under the current system (e.g. moral hazard). Please see Section 4.1 in the revised manuscript.

2. The increases in utilization in the first paragraph, outpatient and inpatient, are *massive* and exceed the rates of service use in the US. I find them a little hard to believe. If they truly are national rates of hospitalization and outpatient visit use, how can the Chinese system bear the huge influx of patients? This is not exactly in the scope of this paper perhaps, but it could at least be alluded to.

Response: Yes, the changes we describe for China are indeed massive! We did not wish to sound too propagandistic in stating the success of the system in simply meeting the influx of patients over this time period, but the data are indeed accurate and reasonably well measured, so not a fluke of measurement. In 2016, the global age-standardized outpatient utilization rate was 5·42 visits (95% uncertainty interval [UI] 4·88–5·99) per capita and the inpatient utilization rate was 0·10 admissions (0·09–0·11) per capita (Moses et al. 2019). The outpatient visits in China were comparable to the global averages and that in the US, but the inpatient utilization rate in China was much higher, bearing more resemblance to hospitalization rates prior to the large shift to ambulatory care and shorter stays. A large number of inpatient hospitalizations in China may not be necessary, as the insurance was designed to cover catastrophic spending and thus patients can get high reimbursements for inpatient care; moreover, health care providers can generate more

revenues from inpatient than outpatient care. Tertiary hospitals are crowded and difficult to get a hospital bed because of the very high inpatient utilization rate in China (World Bank, World Health Organization, Ministry of Finance, National Health and Family Planning Commission, Ministry of Human Resources and Social Security, 2016.). Please see Section 3.1 and Section 4.1 in the revised manuscript.

3. China is so huge, geographically and culturally diverse, it seems like some discussion of regional differences is merited. Does the health insurance support go further in rural areas where I imagine care is cheaper?

Response: We have added some discussion of the large disparities within China, although space constraints preclude going into great detail on these points. Health insurance encourages people to receive health care in the local areas. The cost-sharing rates within local areas (counties or cities) is much lower (i.e., insurance coverage is much more generous for care received within the local county for rural residents) compared to out of network care (receiving services in major cities, such as Beijing, Shanghai). However, rural people still need to seek high quality care in urban areas, because the hospitals and doctors in rural areas have less capacity for specialized care and are generally (correctly) perceived to be of lower quality than the urban hospitals. Please see Section 4.1 in the revised manuscript.

4. It would be helpful to know more about the breakdown of out of pocket spending by type of utilization, i.e. outpatient visits, medications etc.

Response: We agree that the breakdown of out-of-pocket spending by type of utilization will be very helpful, but unfortunately this information is not available in China.

Reviewer 4

This is really a great article. Congratulations to the Authors. The article identified three keys gaps for SDG's 3.8 China Health Insurance System is facing as well as many countries (strengths of the article): (i) Insufficient target of poor population with public financing that can't be enough for all anytime; (ii) Provider payment not including quality & efficiency; and (iii) Inefficiency of the

health system that makes the healthcare services expensive. The article provides the data supporting the above facts.

The weakness of the article is the lack of the comparison with the best practices in the identified gaps (targeting the poor population with public funds, insurances paying building quality & efficiency in the provider payment mechanisms, efficient healthcare systems. The comparison will help much China to consider the recommendations of the article as feasible.

Response: We agree with Reviewer 4 that the comparison with the best practices in the identified gaps will be very helpful to China to improve China's health insurance system. China is a big country and geographically diverse, so there may be different models and practices. There is no unique model with the best health care practices, but we can learn from many other countries and regions, such as Thailand in strategic purchasing), Turkey in strong primary health care, and Singapore in health care system efficiencies (World Bank, World Health Organization, Ministry of Finance, National Health and Family Planning Commission, Ministry of Human Resources and Social Security, 2016). Please see it at the end of Section 4.2 in the revised manuscript.

Reference:

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