

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form (<http://bmjopen.bmj.com/site/about/resources/checklist.pdf>) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Exploring the role of hospitals and office-based physicians in timely provision of statins following acute myocardial infarction: a secondary analysis of a nationwide cohort using cross-classified multilevel models
AUTHORS	Schang, Laura; Koller, Daniela; Franke, Sebastian; Sundmacher, L

VERSION 1 – REVIEW

REVIEWER	Jose Ramon Gonzalez-Juanatey Cardiology Departement. Hospital Clinico Universitario de Santiago de Compostela
REVIEW RETURNED	30-Apr-2019

GENERAL COMMENTS	<p>The paper entitled "Exploring the role of hospitals and office-based physicians in timely provision of appropriate secondary prevention of acute myocardial infarction: a cross-classified multilevel analysis of empirical patient-sharing networks in Germany." it is an interesting paper with complex statistic methods that shows that the odds of receiving a statin prescription within 30 days after hospital discharge depends more strongly on the hospital of discharge than on the office-based physician.</p> <p>The paper shows some aspects that need to be explained for a better understanding of the research performed</p> <ul style="list-style-type: none"> -The patients sent for rehabilitation (n=3429), is cardiac rehabilitation or physical rehabilitation due to other problems, like stroke or disabilities after the AMI. -Is the presence of a cardiac rehabilitation program considered in the statistical analysis? This aspect could influence in more statin prescription... -Final study population is curious as is near 1 UP per 2 patient proportion (32207 UPs for 52489 patients)... it seems too many doctors for a low statin prescription -It is difficult to believe that only 52 to 71% get statins in the first 30 days... was data collection in any point audited... the data suggest a very bad practice in this network if it is true... it is outside any good practice standards -Was other drug prescription evaluated in the network? Is the same problem with betablocker, aspirin, clopidogrel, ACE-I if they had heart failure...?
-------------------------	--

REVIEWER	Lena Ansmann Department of Health Services Research, University of Oldenburg
REVIEW RETURNED	16-May-2019

GENERAL COMMENTS	<p>The authors conducted a cross-classified multilevel analysis of routine data to explore the variance in statine prescription after acute myocardial infarction in Germany. Practice variation is an important area of health services research and there are very few studies trying to entangle variation on different levels. This work significantly contributes to the methodology in the field as well as the understanding of variation. Although the work is relevant and well-done, there are some major questions and comments that need to be answered before publication:</p> <ol style="list-style-type: none"> 1. The title is very complex and long. I recommend to shorten it by leaving out “secondary prevention” and “patient-sharing networks”, which both are not necessary in the title in my view. 2. The abstract is hard to understand because it is quite complex. Please try to use easier expressions to make your point. Maybe avoid using terms that need explanation, such as “empirical networks”, “patient-sharing networks”. And try to reduce the amount of catchwords which are not completely necessary, such as “cross-sectoral quality”. 3. Introduction: the authors mention two strands of research. Is cross-classified multilevel analysis a research strand or rather a method? 4. Table 1 is really helpful, since hypotheses are derived from literature. Two remarks: (1) the authors state hospital size and teaching status are related to better discharge management. However, the associations found between hospital structures and quality of care/patient outcomes are often less clear and often the direction of associations unclear too (see for example Hearld, L. R., Alexander, J. A., Fraser, I., & Jiang, H. J. (2008). Review: How do hospital organizational structure and processes affect quality of care?: a critical review of research methods. <i>Medical Care Research and Review</i> : MCRR, 65(3), 259–299. https://doi.org/10.1177/1077558707309613). Moreover, a recent study from Germany showed that there is no associations between teaching status, hospital volume and the discharge process reported by patients: Nowak, M., Swora, M., Karbach, U., Pfaff, H., & Ansmann, L. (2019). Associations between hospital structures, processes and patient experiences of preparation for discharge in breast cancer centers: A multilevel analysis. <i>Health Care Management Review</i>, tba. https://doi.org/10.1097/HMR.000000000000237. Thus, I think the authors should think about whether they really want to state a unidirectional hypothesis. (2) I wonder whether in Table 1 instead of “number” (e.g. number of shared patients”) the authors rather meant the “proportion”, since the numbers can only be interpreted as relative to the total numbers. 5. Analytical approach: the fact that on average physicians treated only 1.98 AOK insured patients per year in this sample could easily be the reason for low between-physician variance, right? This could simply be explained by the sample design. I think this is a
-------------------------	--

	<p>clear limitation which needs to be addressed and it puts the MORs in question.</p> <p>6. Results: first sentence of the paragraph, I think it is Table 2 instead of Table 1</p> <p>7. Results: What is the difference between VPC and the intracorrelation coefficient? 3.6% between hospital variance is very small variation. The authors have not yet commented on this. In fact it means that the influence of hospital characteristics can only be marginally small</p> <p>8. Results: All in all, the results part is quite hard to understand without being familiar with the analytical method. Could the authors try to put even more effort into explaining and interpreting MOR, Crl, VPC etc.? I know it is hard to do, but please try to increase understandability.</p> <p>9. Results: The authors state that their full models led to a decrease in variance, however, if you look at the variances in supplement 2 the variance explanation is very small. I think this should clearly be explained, since it means that the great part of variance is explained by factors outside of the ones considered in the models. Could you provide R²? Please discuss what factors these could be.</p> <p>10. Results: page 11, line 45: the refered M3, Table 2 is hard to find. Did they mean Table 3 maybe?</p> <p>11. Results: in general, please avoid using the term “effect” and rather use “associations” since this is simply a cross-sectional observational study and not an interventional study. The authors cannot draw causal conclusions.</p> <p>12. Discussion: The authors conclude that the level of hospitals is more relevant in explaining variation than the level of physicians. I suspect that the low variance between physicians resulted from the datastructure of on average 2 patients per physician only. For multilevel analyses the number of level 1 units per level 2 unit is important. This very low number of level 1 units clearly is a limitation. Please think about reinterpreting it.</p> <p>13. Discussion: The authors conclude that hospitals with a higher number of beds and teaching status have more capacity for implementing transition processes. Can the authors provide evidence/theory for their assumption? Since it could easily be the other way around, when very complex large hospitals have greater problems with organizing themselves appropriate to the patients’ needs.</p> <p>14. Discussion: the authors raise the point that specific patient groups in terms of gender or severity of AMI may systematically get lost in transition. Could the authors please explain and elaborate on that? Why would men and women be treated differently? Why does the severity of disease play a role? Is there evidence to support the assumptions or are those research questions the data brought up and that need to be answered?</p> <p>15. Discussion: what we observed in similar studies is that the variance on hospital level is often very low, as it is the case here,</p>
--	--

	<p>too. I can imagine that instead of the hospital level, it is rather the clinic/department/ward level responsible for variations. Thus, further studies should try to measure variance on this intermediate level two. What do you think about that?</p> <p>16. Table 2: The columns "Mean" is misleading as some values in this column are mean values others are percentages, right? (e.g. 43.78% hospitals with 100-300 beds?)</p> <p>17. Figure 1: Please add the sample size of this analysis</p> <p>18. Online Supplement S.1: Please fill in an extra column with % instead of including percentages in the column "mean". I find that misleading.</p> <p>19. Online Supplement S.2: 10.863 as the lower bound of the CrL for "male" seems to be a typing error. Did you mean 1.086?</p>
--	---

VERSION 1 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Jose Ramon Gonzalez-Juanatey Institution and Country: Cardiology Departement. Hospital Clinico Universitario de Santiago de Compostela Please state any competing interests or state 'None declared': None declared'

Please leave your comments for the authors below The paper entitled "Exploring the role of hospitals and office-based physicians in timely provision of appropriate secondary prevention of acute myocardial infarction: a cross-classified multilevel analysis of empirical patient-sharing networks in Germany." it is an interesting paper with complex statistic methods that shows that the odds of receiving a statin prescription within 30 days after hospital discharge depends more strongly on the hospital of discharge than on the office-based physician.

The paper shows some aspects that need to be explained for a better understanding of the research performed

-The patients sent for rehabilitation (n=3429), is cardiac rehabilitation or physical rehabilitation due to other problems, like stroke or disabilities after the AMI.

Authors' response: Thank you for your thoughtful comments. In our data set, we can merely see that patients were readmitted to a rehabilitation clinic, not for what kind of services. Therefore, our focus is on patients directly discharged to outpatient care and we had to exclude patients sent for rehabilitation.

-Is the presence of a cardiac rehabilitation program considered in the statistical analysis? This aspect could influence in more statin prescription...

Authors' response: We agree that this would be an interesting aspect for further examination. Unfortunately, since we had no information about patients readmitted for rehabilitation services (including patients participating in cardiac rehabilitation programs) and related pharmacotherapy, these patients had to be excluded from our analysis. It is possible that statin prescription rates may differ for these patients. We have added this as a limitation of the study.

-Final study population is curious as is near 1 UP per 2 patient proportion (32207 UPs for 52489 patients) ... it seems too many doctors for a low statin prescription

Authors' response: It is true that the number of patients per UP is small. This is due to two aspects:

First, we focused on AMI patients only, not on all patients treated by office-based physicians in order to enable meaningful analyses within a comparable group of patients.

Second, our data covered patients insured by the AOK (the largest group of statutory health insurers in Germany) only, which amount to 32% of all hospital discharges for AMI in Germany. As we acknowledge in the „Strengths and Limitations“ and Discussion sections, this is a limitation of our study because the true number of patients treated may be larger and the coefficients on AMI volume at the hospital and physician levels must, therefore, be interpreted cautiously. Our study suggests that there is much scope for further in-depth analyses of underlying causes of (unwarranted) variations using a full data set.

-It is difficult to believe that only 52 to 71% get statins in the first 30 days... was data collection in any point audited... the data suggest a very bad practice in this network if it is true... it is outside any good practice standards

Authors' response: We agree the statin prescription rate is not consistent with clinical guidelines and have also emphasized this in the revised abstract. The data we used is based on the routine data available to Germany's largest statutory health insurance fund group (AOK). This is a comprehensive data set which includes all statin prescriptions by office-based physicians in Germany. From discussions we had with other large statutory health insurance funds (e.g. the BARMER), it appears that this is a known phenomenon in Germany. We therefore believe that our findings are plausible.

-Was other drug prescription evaluated in the network? Is the same problem with betablocker, aspirin, clopidogrel, ACE-I if they had heart failure...?

Authors' response: Thank you for your comment. Our focus on statin prescription was motivated by current clinical guidelines which recommend early onset of statin therapy for secondary prevention of AMI and do not list any contra-indications for this approach (ESC 2012; 2017, see also the introduction). With respect to other drug prescription, data coverage would have been potentially incomplete (e.g. aspirin is also available as an OTC drug in Germany) while other drugs are recommended only under certain conditions or subgroups (e.g. ACE-I for patients with heart failure, as you mention as well), which would have further decreased the size of our study population. Therefore, we focused on statin prescriptions as one important indicator of timely provision of appropriate secondary prevention pharmacotherapy following AMI.

Reviewer: 2

Reviewer Name: Lena Ansmann

Institution and Country: Department of Health Services Research, University of Oldenburg Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below The authors conducted a cross-classified multilevel analysis of routine data to explore the variance in statine prescription after acute myocardial infarction in Germany. Practice variation is an important area of health services research and there are very few studies trying to entangle variation on different levels. This work significantly contributes to the methodology in the field as well as the understanding of variation. Although the work is relevant

and well-done, there are some major questions and comments that need to be answered before publication:

1. The title is very complex and long. I recommend to shorten it by leaving out “secondary prevention” and “patient-sharing networks”, which both are not necessary in the title in my view.

Authors’ response: Thank you for your comment. Following your suggestion, we have shortened the title to „Exploring the role of hospitals and office-based physicians in timely provision of appropriate care following acute myocardial infarction: a cross-classified multilevel analysis“

2. The abstract is hard to understand because it is quite complex. Please try to use easier expressions to make your point. Maybe avoid using terms that need explanation, such as “empirical networks”, “patient-sharing networks”. And try to reduce the amount of catchwords which are not completely necessary, such as “cross-sectoral quality”.

Authors’ response: We have revised the abstract and hope these revisions will increase clarity for readers.

3. Introduction: the authors mention two strands of research. Is cross-classified multilevel analysis a research strand or rather a method?

Authors’ response: Based on our understanding of the literature, cross-classified multilevel analysis is a method that has given rise to a strand of research concerned with – as we write further below – decomposing the contribution of different kinds of clusters that are not nested hierarchically to individual-level outcomes (12). To avoid misunderstandings, we have replaced the expression „strands of research“ by „methodological approaches“.

4. Table 1 is really helpful, since hypotheses are derived from literature. Two remarks:

(1) the authors state hospital size and teaching status are related to better discharge management. However, the associations found between hospital structures and quality of care/patient outcomes are often less clear and often the direction of associations unclear too (see for example Hearld, L. R., Alexander, J. A., Fraser, I., & Jiang, H. J. (2008). Review: How do hospital organizational structure and processes affect quality of care?: a critical review of research methods. *Medical Care Research and Review* : MCCR, 65(3), 259–299. <https://doi.org/10.1177/1077558707309613>). Moreover, a recent study from Germany showed that there is no associations between teaching status, hospital volume and the discharge process reported by patients: Nowak, M., Swora, M., Karbach, U., Pfaff, H., & Ansmann, L. (2019). Associations between hospital structures, processes and patient experiences of preparation for discharge in breast cancer centers: A multilevel analysis. *Health Care Management Review*, tba. <https://doi.org/10.1097/HMR.000000000000237>. Thus, I think the authors should think about whether they really want to state a unidirectional hypothesis.

Authors’ response: Thank you for your helpful remark. Our hypothesis was derived from previous research on AMI in Germany suggesting that the number of beds and the teaching status of a hospital are measures of its general resource capabilities (Stargardt et al. 2014); and we would therefore consider it appropriate in the context of our study. In the Discussion section, however, we recognize that the associations found between hospital structures and quality of care are often less clear. Notably, adding provider characteristics (M3, Table 3) increased the explained variance at the level of hospital-physician-pairs from 35% in model M2 to 67%. This suggests that the association between hospital characteristics and the propensity of statin prescription depended on the specific hospital-physician-pair, and potentially different mechanisms of coordination between different constellations of hospitals and office-based physicians. These findings merit further analysis.

(2) I wonder whether in Table 1 instead of “number” (e.g. number of shared patients”) the authors rather meant the “proportion”, since the numbers can only be interpreted as relative to the total numbers.

Authors’ response: In this case, we mean the number rather than the proportion of shared patients, in line with the two studies cited in Table 1. This means that a hospital sharing three patients with an office-based physician would be seen as engaging in stronger collaboration (in an absolute quantitative sense) compared to a hospital sharing only one patient with an office-based physician.

5. Analytical approach: the fact that on average physicians treated only 1.98 AOK insured patients per year in this sample could easily be the reason for low between-physician variance, right? This could simply be explained by the sample design. I think this is a clear limitation which needs to be addressed and it puts the MORs in question.

Authors’ response: We agree that small cluster sizes do not enable precise conclusions to be drawn about the performance of individual physicians. However, this is not the focus of our study. It is important to distinguish the estimation of separate physician effects (i.e. of the performance of individual physicians) from our focus of interest, the estimation of between-physician variance. To reliably estimate the between-physician variance, what matters is a large number of higher-level units (i.e. physicians) (see also Leckie, 2013, p.11). With 32,207 physicians, this is the case in our study. This allows us to generate reliable estimates of between-provider variation even with a small number of patients per physician (see also Leckie, 2013, p.11). Moreover, we used Markov Chain Monte Carlo (MCMC) methods based on a Bayesian approach which is preferable when clusters comprise few individuals, and has been employed before with similar sample sizes at the individual level (see also Dunn et al. 2015). We have cited the relevant literature in the section on the analytical approach.

6. Results: first sentence of the paragraph, I think it is Table 2 instead of Table 1

Authors’ response: This typing error has now been corrected. Many thanks for pointing it out.

7. Results: What is the difference between VPC and the intraclass correlation coefficient? 3.6% between hospital variance is very small variation. The authors have not yet commented on this. In fact it means that the influence of hospital characteristics can only be marginally small

Authors’ response: Thank you for your comment which helped us to better explain the results.

The VPC represents the proportion of the total observed individual variation in the outcome that is attributable to between-cluster (i.e. between-hospital, between-physician and between each physician-hospital-pair) variation. For simple hierarchical structures like patients nested within hospitals and for a continuous outcome, the VPC is equivalent to the ICC. In our case with a binary outcome and a cross-classified model, the VPC is a more general and appropriate concept and estimated using a latent response formulation (see the section on the analytical approach and for further details Austin & Merlo 2017, cited in the manuscript).

As regards the size of the VPC, our finding that more than 90% of the variation could be attributed to the patient-level is consistent with prior multilevel analyses of health care quality (see Fung et al. 2010). Overall, we found that 6.62% of the observed variation was attributable to providers. The cross-classified approach enabled us to disaggregate this variation to the levels of hospitals, hospital-physician-pairs, and physicians. Importantly, the MORs suggest that each of these levels is relevant for understanding variations in quality. Since the variations in quality of care between hospital-

physician-networks in absolute terms are quite substantial, even when excluding hospitals with small case volumes (below $n=20$ patients, see Figure 1), we believe this is an important finding.

We have revised the results and discussion sections accordingly.

8. Results: All in all, the results part is quite hard to understand without being familiar with the analytical method. Could the authors try to put even more effort into explaining and interpreting MOR, CrI, VPC etc.? I know it is hard to do, but please try to increase understandability.

Authors' response: We have revised the results section and hope this will help. In addition, MOR, CrI and VPC are defined and explained in the analytical approach and results sections.

9. Results: The authors state that their full models led to a decrease in variance, however, if you look at the variances in supplement 2 the variance explanation is very small. I think this should clearly be explained, since it means that the great part of variance is explained by factors outside of the ones considered in the models. Could you provide R^2 ? Please discuss what factors these could be.

Authors' response: We have sought to clarify these aspects in the revised version of the manuscript by distinguishing more strongly between measures of variance at different levels (MOR, VPC) and measures of variance explained by the model (PCV, R_{binary}^2).

Moving from model M2 to the full model M3, the MORs show that the variance between hospital-physician-pairs, for instance, decreased from 1.25 to 1.13. It is important to stress that MORs are measures of heterogeneity, while VPCs attribute the relative proportions of variance to the levels. In the conditional models M2 and M3, VPCs decompose the residual variation in outcomes that remains after accounting for the variables in the model. This means that neither the MORs nor the VPCs quantify the amount of variance that is explained by the model. For this purpose, we have added two measures:

The proportional change in cluster variance (PCV; see Austin and Merlo, 2017) quantifies the proportion of variance that is explained by the by the multilevel logistic regression model at a given level. Using model M1 as the reference, the inclusion of 16 patient characteristics (M2, Online Supplement S2) explained 41% of the variation between hospitals and 35% of the variation between hospital-physician-pairs. Adding provider characteristics (M3, Table 3) increased the explained variance at the level of hospital-physician-pairs to 67%. The explained between-hospital variance increased slightly to 45%.

As a measure of the overall variance explained by the model as a whole, we employed the R_{binary}^2 statistic which incorporates cluster-specific random effects appropriate for use with multilevel logistic regression models (Snijders and Bosker, 2012). Overall, the model with patient characteristics (M2) explained 22% and the model with patient and provider characteristics (M3) explained 27% of the variation in a patient's propensity to receive a statin prescription within 30 days after discharge.

Overall, this suggests that the full model (M3) explained almost half of the variance between hospitals, and about two thirds of the variance between hospital-physician-pairs. With respect to the overall variance in 30-day statin prescriptions, we suggest that potential underlying mechanisms of effective care transitions, such as having follow-up appointments scheduled before discharge (see Couturier et al. 2016), require further research.

10. Results: page 11, line 45: the referred M3, Table 2 is hard to find. Did they mean Table 3 maybe?

Authors' response: That is correct and we have changed this.

11. Results: in general, please avoid using the term "effect" and rather use "associations" since this is simply a cross-sectional observational study and not an interventional study. The authors cannot draw causal conclusions.

Authors' response: We agree that it is not possible to draw causal conclusions based on the results of our study, and have rephrased the terminology where relevant to preclude any misunderstandings.

12. Discussion: The authors conclude that the level of hospitals is more relevant in explaining variation than the level of physicians. I suspect that the low variance between physicians resulted from the datastructure of on average 2 patients per physician only. For multilevel analyses the number of level 1 units per level 2 unit is important. This very low number of level 1 units clearly is a limitation. Please think about reinterpreting it.

Authors' response: As mentioned above, it is important to distinguish the estimation of individual physician performance, for which a larger number of patients per physician would clearly be needed, from the estimation of between-physician variance. To reliably estimate the between-physician variance, what matters is a large number of higher-level units (i.e. physicians) (see also Leckie, 2013, p.11). With 32,207 physicians, this is the case in our study. This allows us to generate reliable estimates of between-provider variation even with a small number of patients per physician.

13. Discussion: The authors conclude that hospitals with a higher number of beds and teaching status have more capacity for implementing transition processes. Can the authors provide evidence/theory for their assumption? Since it could easily be the other way around, when very complex large hospitals have greater problems with organizing themselves appropriate to the patients' needs.

Authors' response: Previous research on AMI in Germany suggests that the number of beds and the teaching status of a hospital are measures of its overall resources (34); and we suggest that in the context of our study, the positive association found for these predictors may reflect greater capacity to implement effective care transition processes. Nevertheless, we recognize that the associations found between hospital structures and quality of care are often less clear and that our findings merit further analysis of the underlying mechanisms. We have added this in the discussion section.

14. Discussion: the authors raise the point that specific patient groups in terms of gender or severity of AMI may systematically get lost in transition. Could the authors please explain and elaborate on that? Why would men and women be treated differently? Why does the severity of disease play a role? Is there evidence to support the assumptions or are those research questions the data brought up and that need to be answered?

Authors' response: This point was brought up by the data and needs to be answered in future research.

15. Discussion: what we observed in similar studies is that the variance on hospital level is often very low, as it is the case here, too. I can imagine that instead of the hospital level, it is rather the clinic/department/ward level responsible for variations. Thus, further studies should try to measure variance on this intermediate level two. What do you think about that?

Authors' response: we agree this is a sensible idea in principle which makes sense if there are several wards or departments discharging patients of the study population. If there is only one ward per hospital (e.g. the cardiology ward discharging AMI patients), including the ward level would seem redundant.

16. Table 2: The columns "Mean" is misleading as some values in this column are mean values others are percentages, right? (e.g. 43.78% hospitals with 100-300 beds?)

Authors' response: We have added an extra column with percentages.

17. Figure 1: Please add the sample size of this analysis

Authors' response: We have added the sample size (n= 48,998 patients).

18. Online Supplement S.1: Please fill in an extra column with % instead of including percentages in the column "mean". I find that misleading.

Authors' response: We have added an extra column with percentages.

19. Online Supplement S.2: 10.863 as the lower bound of the CrL for "male" seems to be a typing error. Did you mean 1.086?

Authors' response: That was indeed a typing error, thank you for spotting it.

VERSION 2 – REVIEW

REVIEWER	Jose Ramon Gonzalez-Juanatey Cardiology Departement. Hospital Clinico Universitario de Santiago de Compostela
REVIEW RETURNED	03-Jul-2019

GENERAL COMMENTS	<p>I want to congratulate the authors for the excellent answer to the reviewers and the new version of the paper</p> <p>The paper now entitled " Exploring the role of hospitals and office-based physicians in timely provision of appropriate care following acute myocardial infarction: a cross-classified multilevel analysis" it is an interesting paper with complex statistic methods that shows that the odds of receiving a statin prescription within 30 days after hospital discharge depends more strongly on the hospital of discharge than on the office-based physician.</p> <p>As the title has been changed through the revision process, I suggest mention statins directly in the title as it is the only secondary prevention measurement fully evaluated</p> <p>The paper shows some aspects that need to be explained for a better understanding of the research performed and I comment your answer to my initial questions</p> <p>-About the topic of rehabilitation</p> <p>I consider your answer adequate</p>
-------------------------	--

	<p>-Is the presence of a cardiac rehabilitation program considered in the statistical analysis? This aspect could influence more statin prescriptions... Good to add this limitation to the paper</p> <p>-The final study population is curious as is near 1 UP per 2 patient proportion (32207 UPs for 52489 patients) ... it seems too many doctors for a low statin prescription</p> <p>I agree with the authors' response</p> <p>-It is difficult to believe that only 52 to 71% get statins in the first 30 days... was data collection in any point audited... the data suggest a very bad practice in this network if it is true... it is outside any good practice standards</p> <p>Authors' response: From discussions we had with other large statutory health insurance funds (e.g. the BARMER), it appears that this is a known phenomenon in Germany. We therefore believe that our findings are plausible.</p> <p>As mention in your answer, I suggest sharing this information in the discussion of the paper as supplementary information</p> <p>-Was other drug prescription evaluated in the network? Is the same problem with betablocker, aspirin, clopidogrel, ACE-I if they had heart failure...?</p> <p>In relation to the authors' response as only the focus is in statins I suggest to focus only on that also in the title, but explaining in the text why other drug therapies were not evaluated in extension in the research</p>
--	--

REVIEWER	Lena Ansmann Department of Health Services Research, Faculty of Medicine and Health Sciences, University of Oldenburg, Germany
REVIEW RETURNED	01-Jul-2019

GENERAL COMMENTS	The authors incorporated the feedback well into their manuscript and answered all questions sufficiently. The paper is now ready to be published, I think.
-------------------------	--

VERSION 2 – AUTHOR RESPONSE

Reviewer: 1

Reviewer Name: Jose Ramon Gonzalez-Juanatey

Institution and Country: Cardiology Departement. Hospital Clinico Universitario de Santiago de Compostela

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

I want to congratulate the authors for the excellent answer to the reviewers and the new version of the paper

The paper now entitled " Exploring the role of hospitals and office-based physicians in timely provision of appropriate care following acute myocardial infarction: a cross-classified multilevel analysis" it is an interesting paper with complex statistic methods that shows that the odds of receiving a statin prescription within 30 days after hospital discharge depends more strongly on the hospital of discharge than on the office-based physician.

As the title has been changed through the revision process, I suggest mention statins directly in the title as it is the only secondary prevention measurement fully evaluated

Authors' response: Thank you for your comment. We have revised the title accordingly.

The paper shows some aspects that need to be explained for a better understanding of the research

performed and I comment your answer to my initial questions

-About the topic of rehabilitation

I consider your answer adequate

-Is the presence of a cardiac rehabilitation program considered in the statistical analysis? This aspect could influence more statin prescriptions... Good to add this limitation to the paper

-The final study population is curious as is near 1 UP per 2 patient proportion (32207 UPs for 52489 patients) ... it seems too many doctors for a low statin prescription

I agree with the authors' response

-It is difficult to believe that only 52 to 71% get statins in the first 30 days... was data collection in any point audited... the data suggest a very bad practice in this network if it is true... it is outside any good practice standards

Authors' response: From discussions we had with other large statutory health insurance funds (e.g. the BARMER), it appears that this is a known phenomenon in Germany. We therefore believe that our findings are plausible.

As mention in your answer, I suggest sharing this information in the discussion of the paper as supplementary information

Authors' response: We have shared this information in the discussion section of the paper.

-Was other drug prescription evaluated in the network? Is the same problem with betablocker, aspirin, clopidogrel, ACE-I if they had heart failure...?

In relation to the authors' response as only the focus is in statins I suggest to focus only on that also in the title, but explaining in the text why other drug therapies were not evaluated in extension in the research

Authors' response: Thank you, we have added this explanation to the discussion section of the paper.

Reviewer: 2

Reviewer Name: Lena Ansmann

Institution and Country: Department of Health Services Research, Faculty of Medicine and Health Sciences, University of Oldenburg, Germany

Please state any competing interests or state 'None declared': None declared

Please leave your comments for the authors below

The authors incorporated the feedback well into their manuscript and answered all questions sufficiently. The paper is now ready to be published, I think.

Authors' response: Thank you for your feedback.