

OBSTETRICS & GYNECOLOGY



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- Comments from the reviewers and editors (email to author requesting revisions)
- Response from the author (cover letter submitted with revised manuscript)*

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obgyn@greenjournal.org.

Date: Dec 23, 2020
To: "Mary Regina Boland" [REDACTED]
From: "The Green Journal" em@greenjournal.org
Subject: Your Submission ONG-20-3138

RE: Manuscript Number ONG-20-3138

Individual- and Neighborhood-Level Risk Factors for Severe Maternal Morbidity

Dear Dr. Boland:

Your manuscript has been reviewed by the Editorial Board and by special expert referees. Although it is judged not acceptable for publication in *Obstetrics & Gynecology* in its present form, we would be willing to give further consideration to a revised version.

If you wish to consider revising your manuscript, you will first need to study carefully the enclosed reports submitted by the referees and editors. Each point raised requires a response, by either revising your manuscript or making a clear and convincing argument as to why no revision is needed. To facilitate our review, we prefer that the cover letter include the comments made by the reviewers and the editor followed by your response. The revised manuscript should indicate the position of all changes made. We suggest that you use the "track changes" feature in your word processing software to do so (rather than strikethrough or underline formatting).

Your paper will be maintained in active status for 21 days from the date of this letter. If we have not heard from you by Jan 15, 2021, we will assume you wish to withdraw the manuscript from further consideration.

REVIEWER COMMENTS:

Reviewer #1:

Thank you for the opportunity to review "Individual- and Neighborhood-Level Risk Factors for Severe Maternal Morbidity" by J. R. Meeker et al.

This is a retrospective analysis investigating the associations between severe maternal morbidity and individual-level risk factors and neighborhood level risk factors. SMM per 10,000 deliveries was characterized by having at least one of 21 SMM indicators (Please reference table 2).

The authors reference the CDC website "How Does CDC Identify Severe Maternal Morbidity?" <https://www.cdc.gov/reproductivehealth/maternalinfanthealth/smm/severe-morbidity-ICD.htm> to support a diagnosis of SMM based on 21 indicators based on the presence of ICD codes. The CDC selected these codes based on a series of journal articles Callaghan et al. and by Kuklina et al. These codes are primarily used for billing and as Callaghan notes (*Obstetrics and gynecology* (New York. 1953), 2012-11, Vol.120 (5), p.1029-1036) "are subject to errors of omission and commission by medical coders as well as changes over time in coding practices." Callaghan should be referenced. The authors do note that use of billing codes is a potential limitation of this analysis. The authors calculated SMM with and without the inclusion of blood transfusion as an indicator and cited Conroy et al. The original suggestion that ICD codes for transfusion have low specificity for hemorrhage was from Main et al (*AJOG*, 214(5), 643.e1-643.e10) which should be cited.

Analysis was based on ICD-9 and ICD-10 coding within the EHR (What EHR was used?) Individual risk factors for SMM were "maternal age, race/ethnicity, marital status, comorbidities (preeclampsia and diabetes), and other relevant delivery outcomes (cesarean delivery, stillbirth, preterm birth, multiple gestation".

Neighborhood level covariates were obtained at the census tract level based on US Census and other local Philadelphia public datasets.

In Figure 1 the authors note a marked decrease in SMM in 2016 due to a decrease in blood transfusions. Was this decrease due to a decrease in need for blood transfusion or to a change in policy that restricted use of blood transfusion to patients with better indicated need? If so this would suggest a bias for over ascertainment of needed transfusion, and therefore SMM, in data collected before 2016.

Were the further calculations of association of SMM based on SMM including transfusion or excluding transfusion? If SMM calculations were done including transfusion were the associations with social and neighborhood factors the same for cases including 2016 and later compared to those earlier? What factors were associated with increased need for transfusion alone? Did the authors consider that other factors associated with being Black or African American, such as an increased incidence of uterine myomata could be associated with increased blood loss at operative delivery and consequent need for transfusion? Such recognized differences could account for some of the disparities in transfusion between White and Black or African American neighborhoods. Presence of myomata is presumably also coded in ICD data.

There is an inherent problem with dealing with such high level data that generalizes characteristics attributed to large

populations. Such an analysis may fail to see the trees when looking at the forest. The authors analysis provides evidence that there is a strong association between being Black or African American and the presence of an ICD code associated with blood transfusion at the time of labor and delivery. The authors also provide evidence associating living in a neighborhood tract with a higher percentage of Black or African American people is associated with being Black or African American (a tautological conclusion) and is also associated with increased risks of poverty and crime. They go on to posit that stress caused by the increased incidence of crime may be a cause of increased maternal morbidity. While this may be true, the associations presented have other potential explanations. Does the data show that increased stress secondary to crime is also a factor leading to SMM in White populations?

Systemic socio-economic factors historically affecting Black or African Americans are increasingly being recognized and need to be addressed. This analysis tries to relate two truisms: that Black or African Americans disproportionately live in neighborhoods with disadvantages of increased crime, poverty and poor housing and that Black or African Americans have higher rates of SMM, especially when including blood transfusion in the definition of SMM. The link between these two true observations is a significant association with being Black but association does not rise to the level of causation. As a society we should indeed work to decrease poverty, improve housing and to create integrated communities in which all could thrive. However, I am not convinced that this will decrease the operative morbidity leading to the potential need for blood transfusion among Black or African Americans, which may, indeed, be due to other inherent biological factors that this analysis did not recognize.

Notes:

Line 45 Precis. Please declare Severe Maternal Morbidity (SMM) before using the abbreviation.

Reviewer #2:

This is a topical study looking for associations between individual and "neighborhood" metrics and severe maternal morbidity. I felt that the manuscript needs to be more explicit in its efforts of understanding health disparities and structural racism. It would be helpful to include some sociology references about how racism and segregation in America has impacted neighborhood housing, education, jobs, medical institutions, health outcomes, etc. How do your selected metrics get at racism? As SSM is getting worse, why not also look at different time points and see what is changing? Have health disparities generally or racism specifically worsened?

In the discussion, can you make any clinically-minded recommendations? The majority of readers are clinicians and would want to know how to apply the findings to their work.

Here are some specific recommendations:

Abstract:

please restate first sentence in Methods. Pregnancies don't deliver, people (women) do.

-how is neighborhood-level defined? Is this a geographically defined region? Please orient the reader. It can be brief here and in greater detail in the methods.

-"percentage of census tract" feels technical. Consider using a more familiar language here.

-In the conclusion, you state "likely contribute to the complexity of rising SMM rates in the United States. I am not sure why the word 'complexity' is used here.

Background: Please state how SMM is reported and whether the reporting mechanisms have been reliable since 1987. Also the sentence "While mortality is steadily increasing nationally" isn't entirely accurate as present tense if you report a trend to 2014 (6 yr ago).

You state "Specifically, including Social Determinants of Health, or social and Risk Factors for SMM environmental stressors that can markedly affect women's health, is an understudied area in SMM research". It would be helpful to mention structural racism explicitly here. How do you connect neighborhood level factors to institutionalized racism?

Reviewer #3:

A retrospective data analysis of 64,344 pregnancies from 4 hospitals within the University of Pennsylvania Health System from 2010-2017

Objective: The purpose of this study is to explore the role that individual risk factors (e.g., medical comorbidities) contribute to SMM while also exploring the contribution of neighborhood-level factors (e.g., poverty, violent crime, and housing violations) to SMM. This is consistent throughout the paper.

line 122 "which has yet to be done in such a diverse population as that served by the University of Pennsylvania Health System (UPHS)" I would not make this claim, others have done this, I would take away "yet to be done"

Results- Discussion overall this is very well done, I ask that you address the following in your Discussion
Curious that the PTB rate is so low in your cohort 6.1%- This is very different than what others have found. Were you able to distinguish between spontaneous and indicated PTB

Cesarean section is a cause or a marker of need for immediate delivery and a marker for either a fetal or a maternal urgent issue vs cesarean itself

Although you state others have found no effect of neighborhood on SMM Ref 25,26,27, why do you think this is? Limitations of studies- the use of different sets? little more detail would be helpful

Ref 25 "Patient-, Hospital-, and Neighborhood-Level Factors Associated with Severe Maternal Morbidity During Childbirth: A Cross-Sectional Study in New York State 2013-2014" They found no effect of neighborhood/community using different data sets?

STATISTICS EDITOR COMMENTS:

Lines 137-140: Which years included classification using ICD-9, ICD-10 or a transition year? Could that have affected the analyses by year?

lines 188-190: Since the study involved more pregnancies than individual patients, clearly some individuals were counted twice. It appears that deliveries, rather than individual mothers, were the unit of comparison. That would violate an assumption of independence of observations. The analysis should account for that distinction, since an individual's risk profile would have some correlation from one pregnancy to another. One should either randomly pick one pregnancy for each individual, or account for the correlation, when all the pregnancies are aggregated for analysis.

Table 1: Should round the %s to nearest 0.1% precision. Should round means and SDs nearest 0.1 yes and 0.1 kg/m².

Table 2: For the column % of 1726 SMM, should round %s to nearest 0.1%. For the column N per 10,000 deliveries, should round to nearest 0.1 per 10,000 precision, since the denominator is ~ 60,000.

Table 3: The column of p-values is not needed, since CIs are given with the ORs and aORs. Should indicate for the reader the variables retained in the final model for the aORs as footnote to the Table. Should also indicate the referent (I assume OR age is per year, wgt per kg, etc, but need to clarify).

Tables 4, 5: Need to indicate the n(%) of SMM occurrences within the various neighborhood level covariates. Rather than reporting the estimate, then the change in % SMM per one unit change in each covariate, I think it would be more informative for the reader to format the % change in SMM with 95% CIs and then omit the column of p-values and of estimates. If desired, the estimates could be available as supplemental material. For Table 5, need to include a footnote stating the covariates retained in the final aOR model. (I assume that Table 4 presents univariate comparisons. If not, then should similarly include list of adjustors in footnote to Table 4.)

EDITOR COMMENTS:

1. Thank you for submitting your work to Obstetrics and Gynecology. If you opt to submit a revision, please be sure to address how these results are applicable to practicing clinicians since the majority of the journal readership is clinicians. For example, would you recommend that we screen pregnant patients for violence?
2. Consider moving some of the content to supplemental material to allow for more focus on "digestible" findings for a typical clinician reader.

EDITORIAL OFFICE COMMENTS:

1. The Editors of Obstetrics & Gynecology are seeking to increase transparency around its peer-review process, in line with efforts to do so in international biomedical peer review publishing. If your article is accepted, we will be posting this revision letter as supplemental digital content to the published article online. Additionally, unless you choose to opt out, we will also be including your point-by-point response to the revision letter. If you opt out of including your response, only the revision letter will be posted. Please reply to this letter with one of two responses:
 - A. OPT-IN: Yes, please publish my point-by-point response letter.
 - B. OPT-OUT: No, please do not publish my point-by-point response letter.

2. Obstetrics & Gynecology uses an "electronic Copyright Transfer Agreement" (eCTA). When you are ready to revise your manuscript, you will be prompted in Editorial Manager (EM) to click on "Revise Submission." Doing so will launch the resubmission process, and you will be walked through the various questions that comprise the eCTA. Each of your coauthors will receive an email from the system requesting that they review and electronically sign the eCTA.

Please check with your coauthors to confirm that the disclosures listed in their eCTA forms are correctly disclosed on the manuscript's title page.

3. For studies that report on the topic of race or include it as a variable, authors must provide an explanation in the manuscript of who classified individuals' race, ethnicity, or both, the classifications used, and whether the options were defined by the investigator or the participant. In addition, the reasons that race/ethnicity were assessed in the study also should be described (eg, in the Methods section and/or in table footnotes). Race/ethnicity must have been collected in a formal or validated way. If it was not, it should be omitted. Authors must enumerate all missing data regarding race and ethnicity as in some cases, missing data may comprise a high enough proportion that it compromises statistical precision and bias of analyses by race.

Use "Black" and "White" (capitalized) when used to refer to racial categories. The nonspecific category of "Other" is a convenience grouping/label that should be avoided, unless it was a prespecified formal category in a database or research instrument. If you use "Other" in your study, please add detail to the manuscript to describe which patients were included in that category.

4. If applicable: In order for an administrative database study to be considered for publication in Obstetrics & Gynecology, the database used must be shown to be reliable and validated. In your response, please tell us who entered the data and how the accuracy of the database was validated. This same information should be included in the Materials and Methods section of the manuscript.

5. Responsible reporting of research studies, which includes a complete, transparent, accurate and timely account of what was done and what was found during a research study, is an integral part of good research and publication practice and not an optional extra. Obstetrics & Gynecology supports initiatives aimed at improving the reporting of health research, and we ask authors to follow specific guidelines for reporting randomized controlled trials (ie, CONSORT), observational studies (ie, STROBE), observational studies using ICD-10 data (ie, RECORD), meta-analyses and systematic reviews of randomized controlled trials (ie, PRISMA), harms in systematic reviews (ie, PRISMA for harms), studies of diagnostic accuracy (ie, STARD), meta-analyses and systematic reviews of observational studies (ie, MOOSE), economic evaluations of health interventions (ie, CHEERS), quality improvement in health care studies (ie, SQUIRE 2.0), and studies reporting results of Internet e-surveys (CHERRIES). Include the appropriate checklist for your manuscript type upon submission. Please write or insert the page numbers where each item appears in the margin of the checklist. Further information and links to the checklists are available at <http://ong.editorialmanager.com>. In your cover letter, be sure to indicate that you have followed the CONSORT, MOOSE, PRISMA, PRISMA for harms, STARD, STROBE, RECORD, CHEERS, SQUIRE 2.0, or CHERRIES guidelines, as appropriate.

6. Your study uses ICD-10 data, please make sure you do the following:

- a. State which ICD-10-CM/PCS codes or algorithms were used as Supplemental Digital Content.
- b. Use both the diagnosis and procedure codes.
- c. Verify the selected codes apply for all years of the study.
- d. Conduct sensitivity analyses using definitions based on alternative codes.
- e. For studies incorporating both ICD-9 and ICD-10-CM/PCS codes, the Discussion section should acknowledge there may be disruptions in observed rates related to the coding transition and that coding errors could contribute to limitations of the study. The limitations section should include the implications of using data not created or collected to answer a specific research question, including possible unmeasured confounding, misclassification bias, missing data, and changing participant eligibility over time.
- f. The journal does not require that the title include the name of the database, geographic region or dates, or use of database linkage, but this data should be included in the abstract.
- g. Include RECORD items 6.3 and 7.1, which relate to transparency about which codes, validation method, and linkage were used to identify participants and variables collected.

7. Standard obstetric and gynecology data definitions have been developed through the reVITALize initiative, which was convened by the American College of Obstetricians and Gynecologists and the members of the Women's Health Registry Alliance. Obstetrics & Gynecology has adopted the use of the reVITALize definitions. Please access the obstetric data

definitions at <https://www.acog.org/practice-management/health-it-and-clinical-informatics/revitalize-obstetrics-data-definitions> and the gynecology data definitions at <https://www.acog.org/practice-management/health-it-and-clinical-informatics/revitalize-gynecology-data-definitions>. If use of the reVITALize definitions is problematic, please discuss this in your point-by-point response to this letter.

8. Because of space limitations, it is important that your revised manuscript adhere to the following length restrictions by manuscript type: Original Research reports should not exceed 22 typed, double-spaced pages (5,500 words). Stated page limits include all numbered pages in a manuscript (i.e., title page, précis, abstract, text, references, tables, boxes, figure legends, and print appendixes) but exclude references.

9. Specific rules govern the use of acknowledgments in the journal. Please note the following guidelines:

- * All financial support of the study must be acknowledged.
- * Any and all manuscript preparation assistance, including but not limited to topic development, data collection, analysis, writing, or editorial assistance, must be disclosed in the acknowledgments. Such acknowledgments must identify the entities that provided and paid for this assistance, whether directly or indirectly.
- * All persons who contributed to the work reported in the manuscript, but not sufficiently to be authors, must be acknowledged. Written permission must be obtained from all individuals named in the acknowledgments, as readers may infer their endorsement of the data and conclusions. Please note that your response in the journal's electronic author form verifies that permission has been obtained from all named persons.
- * If all or part of the paper was presented at the Annual Clinical and Scientific Meeting of the American College of Obstetricians and Gynecologists or at any other organizational meeting, that presentation should be noted (include the exact dates and location of the meeting).

10. The most common deficiency in revised manuscripts involves the abstract. Be sure there are no inconsistencies between the Abstract and the manuscript, and that the Abstract has a clear conclusion statement based on the results found in the paper. Make sure that the abstract does not contain information that does not appear in the body text. If you submit a revision, please check the abstract carefully.

In addition, the abstract length should follow journal guidelines. The word limit for Original Research articles is 300 words; Reviews is 300 words; Case Reports is 125 words; Current Commentary articles is 250 words; Executive Summaries, Consensus Statements, and Guidelines are 250 words; Clinical Practice and Quality is 300 words; Procedures and Instruments is 200 words. Please provide a word count.

11. Only standard abbreviations and acronyms are allowed. A selected list is available online at <http://edmgr.ovid.com/ong/accounts/abbreviations.pdf>. Abbreviations and acronyms cannot be used in the title or précis. Abbreviations and acronyms must be spelled out the first time they are used in the abstract and again in the body of the manuscript.

12. The journal does not use the virgule symbol (/) in sentences with words. Please rephrase your text to avoid using "and/or," or similar constructions throughout the text. You may retain this symbol if you are using it to express data or a measurement.

13. In your Abstract, manuscript Results sections, and tables, the preferred citation should be in terms of an effect size, such as odds ratio or relative risk or the mean difference of a variable between two groups, expressed with appropriate confidence intervals. When such syntax is used, the P value has only secondary importance and often can be omitted or noted as footnotes in a Table format. Putting the results in the form of an effect size makes the result of the statistical test more clinically relevant and gives better context than citing P values alone.

If appropriate, please include number needed to treat for benefits (NNTb) or harm (NNT_h). When comparing two procedures, please express the outcome of the comparison in U.S. dollar amounts.

Please standardize the presentation of your data throughout the manuscript submission. For P values, do not exceed three decimal places (for example, "P = .001"). For percentages, do not exceed one decimal place (for example, 11.1%).

14. Please review the journal's Table Checklist to make sure that your tables conform to journal style. The Table Checklist is

available online here: http://edmgr.ovid.com/ong/accounts/table_checklist.pdf.

15. Please review examples of our current reference style at <http://ong.editorialmanager.com> (click on the Home button in the Menu bar and then "Reference Formatting Instructions" document under "Files and Resources"). Include the digital object identifier (DOI) with any journal article references and an accessed date with website references. Unpublished data, in-press items, personal communications, letters to the editor, theses, package inserts, submissions, meeting presentations, and abstracts may be included in the text but not in the reference list.

In addition, the American College of Obstetricians and Gynecologists' (ACOG) documents are frequently updated. These documents may be withdrawn and replaced with newer, revised versions. If you cite ACOG documents in your manuscript, be sure the reference you are citing is still current and available. If the reference you are citing has been updated (ie, replaced by a newer version), please ensure that the new version supports whatever statement you are making in your manuscript and then update your reference list accordingly (exceptions could include manuscripts that address items of historical interest). If the reference you are citing has been withdrawn with no clear replacement, please contact the editorial office for assistance (obgyn@greenjournal.org). In most cases, if an ACOG document has been withdrawn, it should not be referenced in your manuscript (exceptions could include manuscripts that address items of historical interest). All ACOG documents (eg, Committee Opinions and Practice Bulletins) may be found at the Clinical Guidance page at <https://www.acog.org/clinical> (click on "Clinical Guidance" at the top).

16. Figure 1: Please add tick marks along the x-axis.

Figure 2: Okay.

When you submit your revision, art saved in a digital format should accompany it. If your figure was created in Microsoft Word, Microsoft Excel, or Microsoft PowerPoint formats, please submit your original source file. Image files should not be copied and pasted into Microsoft Word or Microsoft PowerPoint.

When you submit your revision, art saved in a digital format should accompany it. Please upload each figure as a separate file to Editorial Manager (do not embed the figure in your manuscript file).

If the figures were created using a statistical program (eg, STATA, SPSS, SAS), please submit PDF or EPS files generated directly from the statistical program.

Figures should be saved as high-resolution TIFF files. The minimum requirements for resolution are 300 dpi for color or black and white photographs, and 600 dpi for images containing a photograph with text labeling or thin lines.

Art that is low resolution, digitized, adapted from slides, or downloaded from the Internet may not reproduce.

17. Each supplemental file in your manuscript should be named an "Appendix," numbered, and ordered in the way they are first cited in the text. Do not order and number supplemental tables, figures, and text separately. References cited in appendixes should be added to a separate References list in the appendixes file.

18. Authors whose manuscripts have been accepted for publication have the option to pay an article processing charge and publish open access. With this choice, articles are made freely available online immediately upon publication. An information sheet is available at <http://links.lww.com/LWW-ES/A48>. The cost for publishing an article as open access can be found at <https://wkauthorservices.editage.com/open-access/hybrid.html>.

Please note that if your article is accepted, you will receive an email from the editorial office asking you to choose a publication route (traditional or open access). Please keep an eye out for that future email and be sure to respond to it promptly.

If you choose to revise your manuscript, please submit your revision through Editorial Manager at <http://ong.editorialmanager.com>. Your manuscript should be uploaded in a word processing format such as Microsoft Word. Your revision's cover letter should include the following:

- * A confirmation that you have read the Instructions for Authors (<http://edmgr.ovid.com/ong/accounts/authors.pdf>), and
- * A point-by-point response to each of the received comments in this letter. Do not omit your responses to the Editorial Office or Editors' comments.

If you submit a revision, we will assume that it has been developed in consultation with your co-authors and that each author has given approval to the final form of the revision.

Again, your paper will be maintained in active status for 21 days from the date of this letter. If we have not heard from you by

Jan 15, 2021, we will assume you wish to withdraw the manuscript from further consideration.

Sincerely,

Torri Metz, MD
Associate Editor, Obstetrics

2019 IMPACT FACTOR: 5.524

2019 IMPACT FACTOR RANKING: 6th out of 82 ob/gyn journals

In compliance with data protection regulations, you may request that we remove your personal registration details at any time. (Use the following URL: <https://www.editorialmanager.com/ong/login.asp?a=r>). Please contact the publication office if you have any questions.

Reviewer Comments with Author Responses

We thank the reviewers for their thoughtful comments. We have revised the manuscript in response to their comments. We have numbered each of the reviewers' comments to improve the readability of this response. Below is a point-by-point response to the reviews. Specific changes can be found on the line numbers noted below which refers to the version of the manuscript with track changes.

Reviewer 1

Reviewer 1 Comment 1: *Thank you for the opportunity to review "Individual- and Neighborhood-Level Risk Factors for Severe Maternal Morbidity" by J. R. Meeker et al. This is a retrospective analysis investigating the associations between severe maternal morbidity and individual-level risk factors and neighborhood level risk factors. SMM per 10,000 deliveries was characterized by having at least one of 21 SMM indicators (Please reference table 2).*

Author Response: We thank this reviewer for the thoughtful comments and suggestions.

Reviewer 1 Comment 2: *The authors reference the CDC website "How Does CDC Identify Severe Maternal Morbidity?" <https://www.cdc.gov/reproductivehealth/maternalinfanthealth/smm/severe-morbidity-ICD.htm> to support a diagnosis of SMM based on 21 indicators based on the presence of ICD codes. The CDC selected these codes based on a series of journal articles Callaghan et al. and by Kuklina et al. These codes are primarily used for billing and as Callaghan notes (Obstetrics and gynecology (New York. 1953), 2012-11, Vol.120 (5), p.1029-1036) "are subject to errors of omission and commission by medical coders as well as changes over time in coding practices." Callaghan should be referenced. The authors do note that use of billing codes is a potential limitation of this analysis. The authors calculated SMM with and without the inclusion of blood transfusion as an indicator and cited Conroy et al. The original suggestion that ICD codes for transfusion have low specificity for hemorrhage was from Main et al (AJOG, 214(5), 643.e1-643.e10) which should be cited.*

Author Response: We thank the reviewer for this comment and have updated the manuscript to include the Callaghan and Kuklina et al. references as well as the Main et al. reference: now references #5 and #20.

Reviewer 1 Comment 3: *Analysis was based on ICD-9 and ICD-10 coding within the EHR (What EHR was used?). Individual risk factors for SMM were "maternal age, race/ethnicity, marital status, comorbidities (preeclampsia and diabetes), and other relevant delivery outcomes (cesarean delivery, stillbirth, preterm birth, multiple gestation". Neighborhood level covariates were obtained at the census tract level based on US Census and other local Philadelphia public datasets.*

Author Response: The University of Pennsylvania Health System Electronic Health Record uses EPIC software. We have updated the manuscript to include this information:

“The data used in this study comes from four hospitals within the University of Pennsylvania’s Health System (UPHS), including the Hospital of the University of Pennsylvania (Philadelphia, PA), Chester County Hospital (West Chester, PA), Presbyterian Hospital (Philadelphia, PA), Pennsylvania Hospital (Philadelphia, PA), along with associated outpatient clinics. We identified deliveries from 2010 to 2017 from the EPIC Electronic Health Record (EHR) system using delivery diagnosis and procedure codes [15] and a previously developed algorithm [16].” (lines 134-139)

Reviewer 1 Comment 4: *In Figure 1 the authors note a marked decrease in SMM in 2016 due to a decrease in blood transfusions. Was this decrease due to a decrease in need for blood transfusion or to a change in policy that restricted use of blood transfusion to patients with better indicated need? If so this would suggest a bias*

for over ascertainment of needed transfusion, and therefore SMM, in data collected before 2016.

Author Response: We thank the reviewer for this inquiry. We are unable to determine what the exact etiology for the lowering rate of blood transfusions were. It could have plausibly been due to a true lower rate of transfusion, but clinical practices did not drastically change from 2015 to 2016 and so, more likely, is due to the changes in ICD coding. In 2015, there was a change from ICD-9 to ICD-10 coding with directly corresponds to the change in rates. Determining the exact reason for this is beyond the scope of this paper but it is more plausibly related to change in coding and therefore, as the reviewer suggested, either over ascertainment in 2015 or under-ascertainment in 2016. This information has been included in the manuscript in the discussion section, lines 312-317.

“Additionally, our study spans 2010-2017, during which time billing codes transitioned from ICD-9 to ICD-10. Diagnosis and procedural codes became more granular with the introduction of ICD-10 codes in 2015 and therefore possible misclassification for variables, e.g. blood transfusions could occur. The decreased rate of blood transfusions noted in 2016 was less likely due to clinical differences in the actual rate of blood transfusion and more likely due to over estimation in the years prior to ICD-10 coding.”

Reviewer 1 Comment 5: *Were the further calculations of association of SMM based on SMM including transfusion or excluding transfusion? If SMM calculations were done including transfusion were the associations with social and neighborhood factors the same for cases including 2016 and later compared to those earlier? What factors were associated with increased need for transfusion alone? Did the authors consider that other factors associated with being Black or African American, such as an increased incidence of uterine myomata could be associated with increased blood loss at operative delivery and consequent need for transfusion? Such recognized differences could account for some of the disparities in transfusion between White and Black or African American neighborhoods. Presence of myomata is presumably also coded in ICD data.*

Author Response: Thank you to the reviewer for this comment. The calculations of association of SMM included transfusion, per the CDC definition of SMM. We did not look into risk factors that increased the need for transfusion alone in this paper; however, it would certainly be an interesting follow up study to further evaluate the trends of blood transfusions over time to interrogate the decrease seen in 2016 and to specifically consider the evaluation of other risk factors associated with both blood transfusion and Black or African American race (incidence of uterine myomata). At this point, we do not have information on incidence of myomata in our population, however we will include it as future work. However, most of our population was younger than 40 years of age (myomata is high among women 40-60 years old) and therefore we do not expect this to be a main driver of our associations. Furthermore, we did not include women with infertility that were unable to deliver a baby at Penn and myomata is associated with lower fertility rates. But we will consider this in future. Thank you for that comment.

In the discussion we include the following (lines 317-321):

“Future work will include also assessing other comorbidities such as uterine myomata that tend to occur in older women of color (>40 year old) to assess what affect this has on incidence of SMM in our populations along with neighborhood affects (37). However, the majority of our population is under 40 years of age and therefore, it is unlikely to have a major effect, but would be interesting to consider in future.”

Reviewer 1 Comment 6: *There is an inherent problem with dealing with such high level data that generalizes characteristics attributed to large populations. Such an analysis may fail to see the trees when looking at the forest. The authors' analysis provides evidence that there is a strong association between being Black or African American and the presence of an ICD code associated with blood transfusion at the time of labor and*

delivery. The authors also provide evidence associating living in a neighborhood tract with a higher percentage of Black or African American people is associated with being Black or African American (a tautological conclusion) and is also associated with increased risks of poverty and crime. They go on to posit that stress caused by the increased incidence of crime may be a cause of increased maternal morbidity. While this may be true, the associations presented have other potential explanations. Does the data show that increased stress secondary to crime is also a factor leading to SMM in White populations?

Author Response: We thank the reviewer for this comment and agree with the limitation of EHR and neighborhood data to allow for a more granular look to definitively determine the drivers of morbidity. The reviewer is correct in that there may be numerous explanations for the findings of the associations with crime and morbidity. While one possible explanation may be exposure to stress, another possible explanation may be inequitable interactions with the justice system between Black and white populations, food insecurity, or others. With this data, we were unable to say anything definitively about the role of living in a White neighborhood and crime and therefore have changed the wording in the discussion. These changes can be found in lines 284-286.

Reviewer 1 Comment 7: *Systemic socio-economic factors historically affecting Black or African Americans are increasingly being recognized and need to be addressed. This analysis tries to relate two truisms: that Black or African Americans disproportionately live in neighborhoods with disadvantages of increased crime, poverty and poor housing and that Black or African Americans have higher rates of SMM, especially when including blood transfusion in the definition of SMM. The link between these two true observations is a significant association with being Black but association does not rise to the level of causation. As a society we should indeed work to decrease poverty, improve housing and to create integrated communities in which all could thrive. However, I am not convinced that this will decrease the operative morbidity leading to the potential need for blood transfusion among Black or African Americans, which may, indeed, be due to other inherent biological factors that this analysis did not recognize.*

Author Response: We thank the reviewer for this comment. We agree that this analysis does not get at causation but rather associations that might point to historic racism in this country. By conducting this analysis with neighborhood-level factors that are known to be differential among races, we hope to contribute to the body of literature discussing racism versus race that is increasingly being expanded upon. In that vein, we are more interested in the social-construct of race, incorporating neighborhood level variables that are not biological, and how that may manifest clinically. We certainly agree that clinical outcomes differ based on race and the goal of this manuscript is not to find an exact causation but moreover, to support the idea that it is not purely biological or clinical risk factors (e.g. obesity, medical comorbidities) driving the association between race and SMM.

We have added the following statement in the discussion to expand upon this: Lines 332-335: “This study importantly highlights, once again, that differences in SMM by race are not purely biological or due to clinical risk factors alone. With the neighborhood level factors we found to be independent predictors, differences in race and SMM are more likely to be due to the social-construct of race and racism itself.”

Reviewer 1 Comment 8: *Line 45 Precis. Please declare Severe Maternal Morbidity (SMM) before using the abbreviation.*

Author Response: Thank you to the reviewer for this note. We have updated the Precis to read:

“This study sheds light on individual-level and neighborhood-level risk factors for Severe Maternal Morbidity (SMM) that contribute to the complexity of rising SMM rates in the United States.”

Reviewer: 2

Reviewer 2 Comment 1: *This is a topical study looking for associations between individual and "neighborhood" metrics and severe maternal morbidity. I felt that the manuscript needs to be more explicit in its efforts of understanding health disparities and structural racism. It would be helpful to include some sociology references about how racism and segregation in America has impacted neighborhood housing, education, jobs, medical institutions, health outcomes, etc. How do your selected metrics get at racism? As SSM is getting worse, why not also look at different time points and see what is changing? Have health disparities generally or racism specifically worsened?*

Author Response: We thank the reviewer for this comment. We have included in the manuscript a more explicit couple of sentences in how we see this study fits into understanding health disparities and structural racism:

We have referenced some of Nancy Krieger's work on health disparities and structural racism in the background, lines 119-121:

“Krieger et al. have shown structural racism and historical segregation of neighborhoods to be huge drivers of poor health outcomes [11, 12]. It is in this vein of study that we hope to better understand the role of neighborhood disparities on SMM. Specifically, including Social Determinants of Health, or social and environmental stressors that can markedly affect women's health, is an understudied area in SMM research [13, 14].”

Evaluating different time points to see what aspects of racism have changed over time is beyond the scope of this manuscript. However, this is an important and exciting idea that we will consider for future research.

Reviewer 2 Comment 2: *In the discussion, can you make any clinically-minded recommendations? The majority of readers are clinicians and would want to know how to apply the findings to their work.*

Author Response: Thank you for this suggestion. Until we better understand the true underlying reasons for the associations of neighborhood level factors, such as crime and violence, and the increase in SMM, it would be reasonable for clinicians to consider using crime as a proxy for SMM risk. Incorporating zip code level data into prenatal screening for SMM risk is an interesting approach to consider although we must be cognizant to not perpetuate biases that are not biologic in nature.

We have commented on this in the discussion but are wary of making definitive clinical recommendations based on a study evaluating associations. More research must be done in this area to further guide clinical change.

These changes can be found in the discussion, lines 337-339 and read: “Screening for neighborhood-level crime may be an interesting approach to consider for risk-based SMM screening, however, we must be cognizant to not perpetuate biases that are not biologic in nature. More research must be done in the area to further guide clinical change.”

Reviewer 2 Comment 3: Abstract:

-please restate first sentence in Methods. Pregnancies don't deliver, people (women) do.

-how is neighborhood-level defined? Is this a geographically defined region? Please orient the reader. It can be brief here and in greater detail in the methods.

-"percentage of census tract" feels technical. Consider using a more familiar language here.

-In the conclusion, you state "likely contribute to the complexity of rising SMM rates in the United States. I am not sure why the word "complexity" is used here.

Author Response: Thank you for these comments. The above changes have been made.

Reviewer 2 Comment 4: *Background: Please state how SMM is reported and whether the reporting mechanisms have been reliable since 1987. Also the sentence "While mortality is steadily increasing nationally" isn't entirely accurate as present tense if you report a trend to 2014 (6 yr ago).*

Author Response: We thank the reviewer for this comment. Pregnancy-related deaths have been reported since 1987 through the CDC's Pregnancy Mortality Surveillance System. Medical epidemiologists review and analyze death records, linked birth records, and fetal death records if applicable from all 50 states. The CDC has been reporting SMM since 1993. They updated the list of indicators to include 21 instead of 25 in 2015 when the coding system changed from ICD-9 to ICD-10; however, they have only reported up through 2014. We have added in this information regarding SMM reporting to the background, lines 103-105:

"National SMM rates have been reported by the Centers of Disease Control (CDC) since 1993 and up through 2014, using administrative hospital discharge data and International Classification of Diseases (ICD) diagnosis and procedure codes."

Additionally, we have adjusted the tense of the aforementioned sentence to read:
"While mortality has steadily increased nationally..."

Reviewer 2 Comment 5: *You state "Specifically, including Social Determinants of Health, or social and Risk Factors for SMM environmental stressors that can markedly affect women's health, is an understudied area in SMM research". It would be helpful to mention structural racism explicitly here. How do you connect neighborhood level factors to institutionalized racism?*

Author Response: Thank you to the reviewer for this comment. Please see the author's response for **Reviewer 1 Comment 7** and **Reviewer 2 Comment 1** to see how we included literature regarding structural racism more explicitly into the manuscript.

Reviewer: 3

Reviewer 3 Comment 1: *A retrospective data analysis of 64,344 pregnancies from 4 hospitals within the University of Pennsylvania Health System from 2010-2017. Objective: The purpose of this study is to explore the role that individual risk factors (e.g., medical comorbidities) contribute to SMM while also exploring the contribution of neighborhood-level factors (e.g., poverty, violent crime, and housing violations) to SMM. This is consistent throughout the paper.*

Author Response: We thank this reviewer for this comment.

Reviewer 3 Comment 2: *line 122 "which has yet to be done in such a diverse population as that served by the University of Pennsylvania Health System (UPHS)" I would not make this claim, others have done this, I would take away "yet to be done"*

Author Response: Thank you for this comment. We have updated the manuscript to read:

"By exploring both of these levels of risk factors, we can assess how strongly each level of stressors or covariates affects SMM, in such a diverse population as that served by the University of Pennsylvania Health System (UPHS)." (lines 127-130)

Reviewer 3 Comment 3: *Results- Discussion overall this is very well done, I ask that you address the following in your Discussion - Curious that the PTB rate is so low in your cohort 6.1%- This is very different than what others have found. Were you able to distinguish between spontaneous and indicated PTB.*

Author Response: We thank the reviewer for this comment. PTB for this manuscript includes both spontaneous and medically indicated PTB. The reviewer is correct in acknowledging that the PTB in this cohort is lower than the national average for PTB. We include in our study only those deliveries that occur >20 weeks gestation and therefore earlier term births may not be captured in our analysis as these would be recorded in the EHR using other billing code data (e.g., spontaneous abortion codes). This might result in underreporting of preterm birth in our cohort. As PTB was not a main outcome of this paper, it was not fully elucidated in this study.

Reviewer 3 Comment 4: *Cesarean section is a cause or a marker of need for immediate delivery and a marker for either a fetal or a maternal urgent issue vs cesarean itself.*

Author Response: Thank you to the reviewer for noting this distinction.

Reviewer 3 Comment 5: *Although you state others have found no effect of neighborhood on SMM Ref 25,26,27, why do you think this is? Limitations of studies- the use of different sets? little more detail would be helpful. Ref 25 "Patient-, Hospital-, and Neighborhood-Level Factors Associated with Severe Maternal Morbidity During Childbirth: A Cross-Sectional Study in New York State 2013-2014" They found no effect of neighborhood/community using different data sets?*

Author Response: Thank you to the reviewer for this inquiry. We believe that when studying the effect of neighborhood-level stressors on SMM it is important to have a diversity of neighborhoods and neighborhood deprivation. Reference 25, by Guglielminotti et al., conducted their study in a New York cohort which is seemingly relatively diverse. However, per their own discussion section the fact that they found no neighborhood-level factors to be associated with SMM does not mean that context of where one lives is not associated with SMM, rather it could be that this particular cohort has a high-level of access to perinatal services, and in that way this population is not diverse.

Statistics Editor

Statistics Editor Comment 1: *Lines 137-140: Which years included classification using ICD-9, ICD-10 or a transition year? Could that have affected the analyses by year?*

Author Response: Thank you for this question. Indeed, ICD-10 came into use during 2015. Please see the response to **Reviewer 1 Comment 4** that addresses this specific issue.

Statistics Editor Comment 2: *lines 188-190: Since the study involved more pregnancies than individual patients, clearly some individuals were counted twice. It appears that deliveries, rather than individual mothers, were the unit of comparison. That would violate an assumption of independence of observations. The analysis should account for that distinction, since an individual's risk profile would have some correlation from one pregnancy to another. One should either randomly pick one pregnancy for each individual, or account for the correlation, when all the pregnancies are aggregated for analysis.*

Author Response: We thank you for this important comment. Per your suggestion we have conducted a sensitivity analysis after randomly picking one pregnancy for the individuals who had more than one. We have included this result in the appendix.

We have added this to the methods:

“As each patient may have had more than one delivery, a sensitivity analysis was performed randomly picking one pregnancy for the individual who had more than one.” (lines 152-154)

In the results we note:

“The 63,334 pregnancies in our cohort were from 50,560 unique patients. Because some women gave birth more than once, the assumption of independent observations for logistic regression may not hold. With that in mind, we reran the analysis with only one pregnancy for patients who had multiple births and found that the effect sizes did not differ by more than 10% (**Appendix 4** and **Table 3**).” (lines 230-234)

Statistics Editor Comment 3: *Table 1: Should round the %s to nearest 0.1% precision. Should round means and SDs nearest 0.1 yes and 0.1 kg/m².*

Author Response: We thank the statistics editor for this comment. We have updated Table 1 to include these changes.

Statistics Editor Comment 4: *Table 2: For the column % of 1726 SMM, should round %s to nearest 0.1%. For the column N per 10,000 deliveries, should round to nearest 0.1 per 10,000 precision, since the denominator is ~ 60,000.*

Author Response: Thank you for this comment. We have updated the table to include these comments.

Statistics Editor Comment 5: *Table 3: The column of p-values is not needed, since CIs are given with the ORs and aORs. Should indicate for the reader the variables retained in the final model for the aORs as footnote to the Table. Should also indicate the referent (I assume OR age is per year, wgt per kg, etc, but need to clarify).*

Author Response: Thank you for this comment, we have deleted the column of p-values. The variables retained in the final model for the aORs are those with an aOR shown. We have indicated the referent for the variables as you noted.

Statistics Editor Comment 6: *Tables 4, 5: Need to indicate the n(%) of SMM occurrences within the various neighborhood level covariates. Rather than reporting the estimate, then the change in % SMM per one unit change in each covariate, I think it would be more informative for the reader to format the % change in SMM with 95% CIs and then omit the column of p-values and of estimates. If desired, the estimates could be available as supplemental material. For Table 5, need to include a footnote stating the covariates retained in the final aOR model. (I assume that Table 4 presents univariate comparisons. If not, then should similarly include list of adjustors in footnote to Table 4.)*

Author Response: We thank the statistics editor for this comment. We have these listed neighborhood-level covariates for each of the pregnancies. Given that these are continuous variables (e.g. number of housing violations, number of violent crimes, percentage in poverty) we cannot indicate the n(%) of SMM occurrences for each of the covariates in the way we're able to with the patient-level variables.

We have formatted the % change in SMM with 95% CI and omitted the column of p-values and estimates. We agree that readability is important. Per your suggestion, we have moved the estimates to a supplemental table.

Lastly, the covariates retained in the final aOR model (Table 5) are those listed in the table in their entirety.

Editor

Editor Comment 1: *Thank you for submitting your work to Obstetrics and Gynecology. If you opt to submit a revision, please be sure to address how these results are applicable to practicing clinicians since the majority of the journal readership is clinicians. For example, would you recommend that we screen pregnant patients for violence?*

Author Response: We thank the editor for this comment. Please see the author's response to **Reviewer 2 Comment 2**.

Editor Comment 2: *Consider moving some of the content to supplemental material to allow for more focus on "digestible" findings for a typical clinician reader.*

Author Response: Thank you for this comment. Per your suggestion we have moved some of the less-digestible material to supplementary. Please see the author's response to **Statistics Editor Comment 6**.

Editorial Office

Editorial Office Comment 1: *The Editors of Obstetrics & Gynecology are seeking to increase transparency around its peer-review process, in line with efforts to do so in international biomedical peer review publishing. If your article is accepted, we will be posting this revision letter as supplemental digital content to the published article online. Additionally, unless you choose to opt out, we will also be including your point-by-point response to the revision letter. If you opt out of including your response, only the revision letter will be posted. Please reply to this letter with one of two responses:*

- A. **OPT-IN:** *Yes, please publish my point-by-point response letter.*
- B. **OPT-OUT:** *No, please do not publish my point-by-point response letter.*

Author Response:

Editorial Office Comment 2: *Obstetrics & Gynecology uses an "electronic Copyright Transfer Agreement" (eCTA). When you are ready to revise your manuscript, you will be prompted in Editorial Manager (EM) to click on "Revise Submission." Doing so will launch the resubmission process, and you will be walked through the various questions that comprise the eCTA. Each of your coauthors will receive an email from the system requesting that they review and electronically sign the eCTA.*

Please check with your coauthors to confirm that the disclosures listed in their eCTA forms are correctly disclosed on the manuscript's title page.

Author Response: Thank you for this note. We will check that any disclosures listed in the coauthors eCTA forms are correctly disclosed on the title page.

Editorial Office Comment 3: *For studies that report on the topic of race or include it as a variable, authors must provide an explanation in the manuscript of who classified individuals' race, ethnicity, or both, the classifications used, and whether the options were defined by the investigator or the participant. In addition, the reasons that race/ethnicity were assessed in the study also should be described (eg, in the Methods section and/or in table footnotes). Race/ethnicity must have been collected in a formal or validated way. If it was not, it should be omitted. Authors must enumerate all missing data regarding race and ethnicity as in some cases, missing data may comprise a high enough proportion that it compromises statistical precision and bias of analyses by race.*

Use "Black" and "White" (capitalized) when used to refer to racial categories. The nonspecific category of "Other" is a convenience grouping/label that should be avoided, unless it was a prespecified formal category in a database or research instrument. If you use "Other" in your study, please add detail to the manuscript to describe which patients were included in that category.

Author Response: Thank you for these instructions. We have made sure to comply with them in our manuscript.

Editorial Office Comment 4: *If applicable: In order for an administrative database study to be considered for publication in Obstetrics & Gynecology, the database used must be shown to be reliable and validated. In your response, please tell us who entered the data and how the accuracy of the database was validated. This same information should be included in the Materials and Methods section of the manuscript.*

Author Response: Not applicable.

Editorial Office Comment 5: *Responsible reporting of research studies, which includes a complete, transparent, accurate and timely account of what was done and what was found during a research study, is an integral part of good research and publication practice and not an optional extra. Obstetrics & Gynecology supports initiatives aimed at improving the reporting of health research, and we ask authors to follow specific guidelines for reporting randomized controlled trials (ie, CONSORT), observational studies (ie, STROBE), observational studies using ICD-10 data (ie, RECORD), meta-analyses and systematic reviews of randomized controlled trials (ie, PRISMA), harms in systematic reviews (ie, PRISMA for harms), studies of diagnostic accuracy (ie, STARD), meta-analyses and systematic reviews of observational studies (ie, MOOSE), economic evaluations of health interventions (ie, CHEERS), quality improvement in health care studies (ie, SQUIRE 2.0), and studies reporting results of Internet e-surveys (CHERRIES). Include the appropriate checklist for your manuscript type upon submission. Please write or insert the page numbers where each item appears in the margin of the checklist. Further information and links to the checklists are available at <http://ong.editorialmanager.com>. In your cover letter, be sure to indicate that you have followed the CONSORT, MOOSE, PRISMA, PRISMA for harms, STARD, STROBE, RECORD, CHEERS, SQUIRE 2.0, or CHERRIES guidelines, as appropriate.*

Author Response: We thank the editorial office for this comment. We have completed the STROBE checklist.

Editorial Office Comment 6: *Your study uses ICD-10 data, please make sure you do the following:*

- a. *State which ICD-10-CM/PCS codes or algorithms were used as Supplemental Digital Content.*
- b. *Use both the diagnosis and procedure codes.*
- c. *Verify the selected codes apply for all years of the study.*
- d. *Conduct sensitivity analyses using definitions based on alternative codes.*
- e. *For studies incorporating both ICD-9 and ICD-10-CM/PCS codes, the Discussion section should acknowledge there may be disruptions in observed rates related to the coding transition and that coding errors could contribute to limitations of the study. The limitations section should include the implications of using data not created or collected to answer a specific research question, including possible unmeasured confounding, misclassification bias, missing data, and changing participant eligibility over time.*
- f. *The journal does not require that the title include the name of the database, geographic region or dates, or use of database linkage, but this data should be included in the abstract.*
- g. *Include RECORD items 6.3 and 7.1, which relate to transparency about which codes, validation method, and linkage were used to identify participants and variables collected.*

Author Response: Please see **Appendix 1** for the ICD-9 and ICD-10 codes we used in this study.

Editorial Office Comment 7: *Standard obstetric and gynecology data definitions have been developed through the reVITALize initiative, which was convened by the American College of Obstetricians and Gynecologists and the members of the Women's Health Registry Alliance. Obstetrics & Gynecology has adopted the use of the reVITALize definitions. Please access the obstetric data definitions at <https://www.acog.org/practice-management/health-it-and-clinical-informatics/revitalize-obstetrics-data-definitions> and the gynecology data definitions at <https://www.acog.org/practice-management/health-it-and-clinical-informatics/revitalize-gynecology-data-definitions>. If use of the reVITALize definitions is problematic, please discuss this in your point-by-point response to this letter.*

Author Response: Thank you for this comment. We have accessed the obstetric and gynecology data definitions and determined use of these definitions are not problematic in this manuscript.

Editorial Office Comment 8: *Because of space limitations, it is important that your revised manuscript adhere to the following length restrictions by manuscript type: Original Research reports should not exceed 22 typed, double-spaced pages (5,500 words). Stated page limits include all numbered pages in a manuscript (i.e., title page, précis, abstract, text, references, tables, boxes, figure legends, and print appendixes) but exclude references.*

Author Response: We thank the editorial office for this instruction. Our revised manuscript does not exceed 5,500 words.

Editorial Office Comment 9: *Specific rules govern the use of acknowledgments in the journal. Please note the following guidelines:*

- * All financial support of the study must be acknowledged.*
- * Any and all manuscript preparation assistance, including but not limited to topic development, data collection, analysis, writing, or editorial assistance, must be disclosed in the acknowledgments. Such acknowledgments must identify the entities that provided and paid for this assistance, whether directly or indirectly.*
- * All persons who contributed to the work reported in the manuscript, but not sufficiently to be authors, must be acknowledged. Written permission must be obtained from all individuals named in the acknowledgments, as readers may infer their endorsement of the data and conclusions. Please note that your response in the journal's electronic author form verifies that permission has been obtained from all named persons.*
- * If all or part of the paper was presented at the Annual Clinical and Scientific Meeting of the American College of Obstetricians and Gynecologists or at any other organizational meeting, that presentation should be noted (include the exact dates and location of the meeting).*

Author Response: Thank you for this comment. We have adhered to these directives.

Editorial Office Comment 10: *The most common deficiency in revised manuscripts involves the abstract. Be sure there are no inconsistencies between the Abstract and the manuscript, and that the Abstract has a clear conclusion statement based on the results found in the paper. Make sure that the abstract does not contain information that does not appear in the body text. If you submit a revision, please check the abstract carefully.*

In addition, the abstract length should follow journal guidelines. The word limit for Original Research articles is 300 words; Reviews is 300 words; Case Reports is 125 words; Current Commentary articles is 250 words; Executive Summaries, Consensus Statements, and Guidelines are 250 words; Clinical Practice and Quality is 300 words; Procedures and Instruments is 200 words. Please provide a word count.

Author Response: We have checked the abstract for inconsistencies with the manuscript and stayed within the 300 word limit for original research articles.

Editorial Office Comment 11: *Only standard abbreviations and acronyms are allowed. A selected list is available online at <http://edmgr.ovid.com/ong/accounts/abbreviations.pdf>. Abbreviations and acronyms cannot be used in the title or précis. Abbreviations and acronyms must be spelled out the first time they are used in the abstract and again in the body of the manuscript.*

Author Response: Thank you to the office for this reminder. We have made sure that abbreviations and acronyms are spelled out the first time they are used in the abstract and again in the manuscript body.

Editorial Office Comment 12: *The journal does not use the virgule symbol (/) in sentences with words. Please rephrase your text to avoid using "and/or," or similar constructions throughout the text. You may retain this symbol if you are using it to express data or a measurement.*

Author Response: Thank you to the editorial office for this comment. We have edited our manuscript to be in compliance with this direction.

Editorial Office Comment 13: *In your Abstract, manuscript Results sections, and tables, the preferred citation should be in terms of an effect size, such as odds ratio or relative risk or the mean difference of a variable between two groups, expressed with appropriate confidence intervals. When such syntax is used, the P value has only secondary importance and often can be omitted or noted as footnotes in a Table format. Putting the results in the form of an effect size makes the result of the statistical test more clinically relevant and gives better context than citing P values alone.*

If appropriate, please include number needed to treat for benefits (NNTb) or harm (NNTh). When comparing two procedures, please express the outcome of the comparison in U.S. dollar amounts.

Please standardize the presentation of your data throughout the manuscript submission. For P values, do not exceed three decimal places (for example, "P = .001"). For percentages, do not exceed one decimal place (for example, 11.1%).

Author Response: Thank you for this comment. We prioritize effect sizes with 95% confidence intervals whenever possible. In the cases where we use a p-value we do not exceed three decimal places. Additionally, we do not exceed one decimal place for percentages.

Editorial Office Comment 14: *Please review the journal's Table Checklist to make sure that your tables conform to journal style. The Table Checklist is available online here: http://edmgr.ovid.com/ong/accounts/table_checklist.pdf.*

Author Response: We thank the editorial office for this comment, and we have reviewed the journal's table checklist to make sure that our tables conform to the journal style.

Editorial Office Comment 15: *Please review examples of our current reference style at <http://ong.editorialmanager.com> (click on the Home button in the Menu bar and then "Reference Formatting Instructions" document under "Files and Resources"). Include the digital object identifier (DOI) with any journal article references and an accessed date with website references. Unpublished data, in-press items, personal communications, letters to the editor, theses, package inserts, submissions, meeting presentations, and abstracts may be included in the text but not in the reference list.*

In addition, the American College of Obstetricians and Gynecologists' (ACOG) documents are frequently updated. These documents may be withdrawn and replaced with newer, revised versions. If you cite ACOG documents in your manuscript, be sure the reference you are citing is still current and available. If the reference you are citing has been updated (ie, replaced by a newer version), please ensure that the new version supports whatever statement you are making in your manuscript and then update your reference list accordingly (exceptions could include manuscripts that address items of historical interest). If the reference you are citing has been withdrawn with no clear replacement, please contact the editorial office for assistance (obgyn@greenjournal.org). In most cases, if an ACOG document has been withdrawn, it should not be referenced in your manuscript (exceptions could include manuscripts that address items of historical interest). All ACOG documents (eg, Committee Opinions and Practice Bulletins) may be found at the Clinical Guidance page at <https://www.acog.org/clinical> (click on "Clinical Guidance" at the top).

Author Response: Thank you to the office for these instructions. We have made sure that our references are formatted appropriately.

Editorial Office Comment 16: *Figure 1: Please add tick marks along the x-axis.*

Figure 2: Okay.

When you submit your revision, art saved in a digital format should accompany it. If your figure was created in Microsoft Word, Microsoft Excel, or Microsoft PowerPoint formats, please submit your original source file. Image files should not be copied and pasted into Microsoft Word or Microsoft PowerPoint.

When you submit your revision, art saved in a digital format should accompany it. Please upload each figure as a separate file to Editorial Manager (do not embed the figure in your manuscript file).

If the figures were created using a statistical program (eg, STATA, SPSS, SAS), please submit PDF or EPS files generated directly from the statistical program.

Figures should be saved as high-resolution TIFF files. The minimum requirements for resolution are 300 dpi for color or black and white photographs, and 600 dpi for images containing a photograph with text labeling or thin lines.

Art that is low resolution, digitized, adapted from slides, or downloaded from the Internet may not reproduce.

Author Response: We thank the editorial office for these instructions. We have added tick marks to Figure 1, and we have submitted the original Excel source file for Figures 1 and 2.

Editorial Office Comment 17: *Each supplemental file in your manuscript should be named an "Appendix," numbered, and ordered in the way they are first cited in the text. Do not order and number supplemental tables, figures, and text separately. References cited in appendixes should be added to a separate References list in the appendixes file.*

Author Response: Thank you for this comment. We have edited our supplemental file to these specifications.

Editorial Office Comment 18: *Authors whose manuscripts have been accepted for publication have the option to pay an article processing charge and publish open access. With this choice, articles are made freely available online immediately upon publication. An information sheet is available at <http://links.lww.com/LWW-ES/A48>. The cost for publishing an article as open access can be found at <https://wkauthorservices.editage.com/open-access/hybrid.html>.*

Please note that if your article is accepted, you will receive an email from the editorial office asking you to choose a publication route (traditional or open access). Please keep an eye out for that future email and be sure to respond to it promptly.

Author Response: Thank you, we will look for this future email in the case that our manuscript is accepted for publication.