OBSTETRICS & GYNECOLOGY

NOTICE: This document contains correspondence generated during peer review and subsequent revisions but before transmittal to production for composition and copyediting:

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

**The corresponding author has opted to make this information publicly available.*

Personal or nonessential information may be redacted at the editor's discretion.

Questions about these materials may be directed to the *Obstetrics & Gynecology* editorial office: obgyn@greenjournal.org.

Date: Jun 04, 2020
To: "Sangini Sheth" [redacted]
From: "The Green Journal" em@greenjournal.org
Subject: Your Submission ONG-20-1200

RE: Manuscript Number ONG-20-1200

Evaluation of an inpatient postpartum human papillomavirus immunization program

Dear Dr. Sheth:

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).

Due to the COVID-19 pandemic, your paper will be maintained in active status for 30 days from the date of this letter. If we have not heard from you by Jul 04, 2020, we will assume you wish to withdraw the manuscript from further consideration.

REVIEWER COMMENTS:

Reviewer #1: This paper reports on a quality improvement program aimed at improving HPV vaccination rates by immunizing eligible women as in-patients during the immediate postpartum period. The program succeeded in significantly increasing vaccination rates but it was not clear whether the success was due to the time and place where vaccination was offered or was due to other factors. Some questions that might aid in distinguishing include:

* How many of the women vaccinated as in-patients had a documented prior outpatient offer where they refused vaccination?

* The program utilized resource-intense patient navigators and text messaging-based patient reminders. It is possible that had these same resources been applied to the same women on an outpatient basis, the success of the program would have been similar. Are these resources used in the outpatient setting for women not participating in this program?

* Successful vaccination for the first (and subsequent) doses in the series would be most revealing. This would be especially true had these women been offered vaccination prior to pregnancy and declined. Women who received their first dose prior to pregnancy and agreed to a second or third dose during their postpartum stay may just be manifesting a missed opportunity to complete their vaccination schedule rather than reluctance to vaccinate. This would also assume that enough time elapsed after their previous dose to get the next dose in the series before they became pregnant and lost that opportunity. Overcoming a failure to vaccinate due to missed opportunity is not as great an achievement in a captive audience during the postpartum stay as it would be in someone who was reluctant to vaccinate in the first place.

* It would be helpful to know the rates of vaccination per vaccination opportunity between the IPP-HPV group and those who did not have inpatient vaccination. Also, were more of the women in the IPP-HPV group vaccinated at the first opportunity or subsequent opportunities? This might help distinguish whether subsequent vaccinations were due to a greater number of vaccination opportunities in the IPP-HPV group.

Reviewer #2: The authors studied a 2-year pilot program that provided HPV vaccination to inpatient, postpartum women in an effort to increase rates of vaccination initiation and completion with HPV. Using existing medical records, a program coordinator identified women who needed to either start or complete the series. All eligible women were offered the vaccine postpartum while inpatient. 67% of eligible women received the HPV vaccine during their postpartum admission, and those who received the vaccine as an inpatient were more likely to attend clinic visits and to complete the series than

those who did not.

Methodology is sound. The authors do identify a significant limitation in that medical records, particularly for HPV vaccination which women may receive through a pediatrician, may be incomplete or they may be relying on women's memories to remember whether they were vaccinated or not. However, this limitation does not negatively impact the validity of the study results. In addition, the authors examine both missed opportunities for receipt of HPV vaccination after discharge. In doing so, they were able to analyze predictors of receipt of HPV vaccination during both the inpatient and outpatient times. An interesting finding was that women who received an inpatient dose of HPV vaccination were more likely to attend clinic visits, which is an important detail as nearly 60% of women do not attend a postpartum visit. The authors could consider mentioning more explicitly that fewer of the women who had received one dose of HPV vaccine previously (17%) managed to complete the series vs 25% of women who had never received a dose prior to their inpatient dose.

The authors point out a similar study done in Texas, but the highlight of this study was how seamlessly it incorporated the outpatient clinical providers into counseling patients and setting the expectations for receiving HPV vaccination as an inpatient. This utilization of the outpatient clinic uses an already existing relationship generally with providers patients trust to promote vaccination in the postpartum period. In addition, the authors were able to follow these patients even after delivery and had set up an infrastructure to promote vaccination completion rates as an outpatient. This workflow utilizing the clinic is one of the most intriguing aspects of the study that lends itself well to replication in other cities/hospitals.

Overall, the study is well-written and very clear. The abstract clearly states objectives and findings. Tables are clear and references are relevant. A few points of clarification:

Line 135: The authors mention CDC recommendations for administration of HPV vaccine up until age 45 later in the paper, but I would suggest mentioning it in the introduction and clarifying that adults up until age 45 may receive the vaccine. The authors should also consider stating why they limited vaccine administration to age 26 (which is a perfectly reasonable approach given the limited number of vaccines available in the program, but mentioning this may clarify the reason that a choice was made to choose that age limit).

Line 145-146: should be reworded for improved flow to start with "Administration of the HPV vaccine is not recommended during pregnancy"

Line 150: should read "have been more widely implemented"

Line 158: can you clarify whether that efficacy of HPV vaccine is for women who had been previously exposed to a different strain of HPV or for all women?

If possible, one thing to consider is whether the authors could analyze any correlation between likelihood of receiving TDAP/influenza vaccinations during pregnancy and HPV vaccine postpartum. Uptake of other vaccinations may predict receptivity to other recommended vaccines.

Reviewer #3: Thank you for this opportunity to review your manuscript. As I read the document I had the following questions and suggestions.

Given data supporting excellent immunity at 9 years of age please consider listing this age in the introduction (instead of 11 & 12). Additionally, it is FDA approved up to age 45.

The introduction can be made short and move this information up to the beginning. List the benefits of the vaccine, poor uptake in the US and then your strategy.

Without a comparator it is hard to appreciate the magnitude of the impact of this intervention.

How was this effort distinct from the work done in this publication? One prior study has shown inpatient postpartum HPV immunization to be feasible and acceptable under a research protocol.(19)

Please address in the discussion.

Why was this age cut of selected?

The program was available to patients less than 27 years old, who received prenatal care at the hospital-based ob-gyn clinic, and who were not up to date on their HPV vaccine series at the time of postpartum hospital admission.

Were vaccine registries reviewed to confirm eligibility?

Is this person sustainable? This person seems to be doing a portion of the work done by a navigator?

The program coordinator identified patients eligible for IPP-HPV on a daily basis by reviewing the 194 inpatient postpartum roster for practice site and patient age. The coordinator reviewed the immunization 195 history of patients meeting program eligibility criteria to determine whether the patient was adequately 196 immunized, and then informed the on-call clinician of all IPP-HPV eligible patients for that day.

Please address in the discussion issues of cost, reimbursement and sustainability or ongoing scaling up of these efforts given that the vaccine was donated.

The HPV vaccine supply for the IPP-HPV pilot program was provided through a drug-only grant from Merck and was therefore available to patients at no cost.

Please mention these interventions briefly in the abstract:

Clinicians providing prenatal care were informed about this new program prior to its initiation at monthly 208 staff meetings and were encouraged to discuss IPP-HPV with eligible patients as part of prenatal care 209 in the third trimester.

Why was this time period selected?

In the analysis section 12 months follow up is required but in the methods it mentions some women were only followed for 6 months?

Why was this cut off selected? Does the clinic not provide the vaccine up to age 45?

if they aged out of eligibility for the HPV vaccine (27 years of age), or at the end of the study if they did not receive any additional doses of the vaccine after discharge.

What were these: After adjusting for possible confounding factors?

When possible add the number of participants to the text, for example: Women who had received 2 prior doses of the vaccine before their hospital admission were more likely to...

Does the following finding have to do with your intervention or is this a property of these persons who are not as apt to adhere with vaccination guidelines?

Women who had received a dose of HPV vaccine while inpatient had a significantly higher probability of receiving subsequent outpatient doses of HPV vaccine compared to those who did not receive the inpatient dose (HR 2.51, 95% confidence interval (CI) 1.76 to 3.58). Kaplan-Meier curves for this analysis are shown in Figure 2.

It is unclear if the researchers initially wanted 12 months of follow up or they found interesting results when the extended the follow up from 6 to 12? 7 Of the women eligible for IPP-HPV who had not completed their vaccine series at hospital discharge, 295 women were able to contribute at least 12 months of follow up time from delivery to the end of the study period (Table 2)

Consider removing the 12 month data as it only revealed associations that diminished with adjustment for confounders?

Why is this a pilot? Address consistently throughout the manuscript and directly describe in the introduction
n evaluation of a pilot quality

How is this population high risk? Are these groups uniquely affected by HPV burden or lack the benefit of the vaccine (access, provision, education)? in a high-risk young adult population

This is novel but it was through a donation program: to create a new opportunity for immunization that did not previously exist and thereby decrease missed opportunities

There were no processing or administrative changes made to maintain stock or access?

What does this manuscript uniquely add to the literature that was not part of the following publication? The University of Texas Medical Branch (UTMB) Texas is the only other such program we are aware of that routinely provides HPV vaccine to postpartum women less than 27 years of age prior to hospital discharge.(20)

Please make sure these are addressed in the methods:

These additional steps included updates on the patient electronic health record problem list if the patient would need additional doses of HPV vaccine following hospital discharge, and intermittent reminders to outpatient clinicians both to discuss the opportunity for postpartum HPV immunization as part of antenatal care and to review HPV immunization history during visits following delivery to facilitate completion of the HPV vaccine series.

Also refer to them in the abstract methods.

Consider putting this in the introduction: benefit of vaccine, poor uptake in US (with disparities), and then the benefit of bundling vaccine administration into the post partum hospitalization care.

women at higher risk for developing cervical cancer and other HPV-associated disease. Incidence of cervical cancer is higher among lower income women and also among black and Hispanic women in the U.S. compared to white and non-Hispanic women.(31-33)

Do your results support this?

Even among women who did not receive the inpatient dose of HPV vaccine, there may have been some benefit due to the positive messaging about the vaccine which may have impacted the likelihood of receiving it at a subsequent outpatient visit.

Is they do suggest this then clearly state that for the reader.

Thank you for your discussion of cost, however it is not clear to me what the proposed solution is or why that age cut off was determined.

Why were the vaccine complete persons included in the cohort? This intervention did not impact them? Were they a kind of comparator group?

The number is figure 1 are slightly different than the numbers in the following tables. Unfortunately, it was not intuitive or clear to me why they should be differed.

Given IPP Dose, N= 265 Not Given IPP Dose, N=129

Reviewer #4: The authors present a well written prospective study on the use of the HPV vaccine in the post partum period in a similar manner to post partum IUD placement. Overall this was a very well written, prospective work that answers an important clinical question and I dont believe is over reaching. The authors should be commended on executing this study as well as the followup that it entailed.

I have only a few minor comments:
1) Please place 95% CIs around your p values so the reader knows the precision of your measurements

2) Globally- I would like the authors to address the validity of offering the vaccine to patients who are postpartum- clearly they have been exposed to HPV if they are pregnant so is this globally futile? I am not saying that it is- but it should be addressed. It is addressed in the intro but lost in discussion.

3) Line 266- please remove that they women were single as this has no bearing on their HPV status

4) Line 276 why are you describing this cohort as "Spanish speaking", while I understand that this grouping encompasses an ethnically diverse group, Spanish speaking is not a broadly define ethnic group .....I would refer to as hispanic or latinx

5) The missed opportunities section should be moved to be part of the discussion section

6) Was there any thought to drawing blood to determine the antigenic response in these women? I know that is likely outside the scope but would be interesting to know (maybe another study)

7) The discussion while well written is a bit verbose. Some of the information presented could be cut out or moved to intro.

STATISTICAL EDITOR COMMENTS:

The Statistical Editor makes the following points that need to be addressed:

line 116: 394/666 = 59%, not 60%

lines 128-129: "highly effective" is over stating the results. While the rate of completing all 3 doses was more than

doubled (22.3% vs 9.3%), the actual "success" rate, by that metric, was only 22%.

Tables 1, 2: Should include the formats: median(IQR) and N(%) as footnotes instead of stating the format with each row characteristic. Should cite ORs and aORs with CIs and omit the p-values. Should state the referent for age, is it per year? For some of the aORs, likely the models are overfitted, due to small counts, e.g., "multirace", "other" marital status.

EDITOR'S COMMENTS:

We no longer require that authors adhere to the Green Journal format with the first submission of their papers. However, any revisions must do so. I strongly encourage you to read the instructions for authors (the general bits as well as those specific to the feature-type you are submitting). The instructions provide guidance regarding formatting, word and reference limits, authorship issues and other relevant topics. Adherence to these requirements with your revision will avoid delays during the revision process by avoiding re-revisions on your part in order to comply with formatting. For instance, we do not use subheadings under the major headings, like “Methods”. Please see the Instructions section about content in the methods section this is required because of the industry sponsorship, even though it was for drug only.

Numbers below refer to line numbers.

107. It is an idiosyncratic fact that at the Journal we tend to avoid the use of the word impact to imply the result of a change, preferring to limit "impact" to mean a physical blow.

110: in the methods section, can you tell us a bit about the IPP-HPV? How does it work? you have some of this information in the discussion section where you discuss billing issues, etc. Please concisely report the process in the methods section.

118: Can you present this a little more clearly and always present data with denominators so the reader knows exactly who is included. So you had 394 eligible women and of these, 264/394 (67%) received one dose; then tell us yy/264 (22.3%) received the 2nd dose. Did you have any women who had previously received the first dose and you gave the 2nd dose to them during their inpatient post partum stay?

116 and in the main body of the manuscript and tables:
P Values vs Effect Size and Confidence Intervals
While P values are a central part of inference testing in statistics, when cited alone, often the strength of the conclusion can be misunderstood. Whenever possible, 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.
This is true for the abstract as well as the manuscript, tables and figures. We much prefer Confidence intervals; p values are unnecessary when you have the CI’s.

Please provide absolute values for variables, in addition to assessment of statistical significance.

We ask that you provide crude OR’s followed by adjusted OR’s for all relevant variables.

Please limit p values to 3 decimal places.

122. Where did 358 come from? 358/394=91% of the eligible women who received a dose in the hospital. You reported on line 118 that the rate was 67%. I’d like to encourage you to consider presenting your data in a different way as I’m confused about how many had prior dose then got complete series in hospital vs who got first dose and then you followed for 12 months. Give some over all statistics then break it down by first dose vs second dose in hospital; did you follow women who did NOT get IPP-HPV to see if they got any vaccinated during the following year?

136 “that cause 85%....”

139. “vaccine coverage” sounds like an insurance benefit. Do you mean “vaccine administration”?

160. Please spell out CDC (use the full name) on first use as with all abbreviations. Does the USPSTF say anything about this?

Your paper can be made more concise. For instance, the introduction should be about 1 page—it is almost 2 full pages. Your discussion likewise should be trimmed by at least 1/3.

183, 173: you do not need to tell us where and when twice. Pick one.

202. Did the Merck grant pay for the 2nd dose as an outpatient also? Is Merck the entire name of the company?

203: please tell us the appropriate interval between dose 1 and dose 2.

273. You did not do a prediction study; these are associations. Please change the wording throughout.

280. We do not allow authors to describe variables or outcomes in terms that imply a difference (such us of the terms "trend" or "tendency" or "marginally different") unless there is a statistical difference. Please edit here and throughout to indicate that there is no difference.

298. the women didn't "contribute" this time; you had this much follow up time in the EMR.

321. I don't understand the importance of this statement. Gardisil can be given on a 2 dose schedule with doses 6-12 months apart or a 3 dose schedule at 0, 2 and 6 months. Which dosing schedule did you give? Looks like from Figure 1, you use the 3 dose schedule. Why? I realize you are trying to get at missed opportunities here. How did you determine eligibility for another dose? By neither schedule would they have been eligible at their post partum visit. Do you know if they were offered the dose or declined it when they returned? Were these visits to OB GYN clinics or any clinic in our system. So the women who got Gardisil were seen more often in the 2-12 months after delivery hospitalization. So what? Did that translate into more vaccines?

356. The comparison to UTMB program is incomplete. Are these rates numerically different only or is there a statistical difference? Is 67% meaningfully different than 75%? It seems to me that both programs achieved similar results.

370. First time you've mentioned anything about outpatient work flows.

385. Preferring Spanish and English what? I know what you mean but you need to say what you mean.

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. 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.

4. 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.

5. 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.

6. 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).

7. 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. Please provide a word count.

8. 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.

9. 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.

10. ACOG is moving toward discontinuing the use of "provider." Please replace "provider" throughout your paper with either a specific term that defines the group to which are referring (for example, "physicians," "nurses," etc.), or use "health care professional" if a specific term is not applicable.

11. 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%").

12. 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.

13. 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).

14. Figures

Figure 1: Please upload as a figure file on Editorial Manager. Can you tell me more about 107 in the green box? Where does that number come from in this figure? Also, can you tell me more about the numbers in blue?

Figure 2: Please upload as a figure file on Editorial Manager.

15. 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 http://edmgr.ovid.com/acd/accounts/ifauth.htm.

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.

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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.

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 30 days from the date of this letter. If we have not heard from you by Jul 04, 2020, we will assume you wish to withdraw the manuscript from further consideration..

Sincerely,

Nancy C. Chescheir, MD
Editor-in-Chief

2018 IMPACT FACTOR: 4.965
2018 IMPACT FACTOR RANKING: 7th out of 83 ob/gyn journals

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Yale SCHOOL OF MEDICINE
OBSTETRICS, GYNECOLOGY & REPRODUCTIVE SCIENCES

July 7, 2020

Dr. Nancy C. Chescheir,
Editor-in Chief, *Obstetrics & Gynecology*

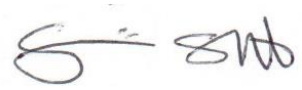
RE: Evaluation of an inpatient postpartum human papillomavirus immunization program

Dear Dr. Chescheir:

We are pleased to submit a revised version of the above-referenced manuscript. We are appreciative of the positive and constructive comments of the reviewers. Please find below a point-by-point response to the concerns raised by the reviewers. In addition, we confirm review of the Instruction for Authors document and the STROBE guidelines. There are two copies of the manuscript attached, one with modifications in "track changes" and another a final clean copy.

We hope that the revisions are satisfactory and that you now find the manuscript suitable for publication.

Sincerely,



Sangini S. Sheth, MD, MPH
Associate Professor, Division of Gynecologic Specialties
Department of Obstetrics, Gynecology & Reproductive Sciences
Yale School of Medicine

Reviewer #1:

Point 1*: How many of the women vaccinated as in-patients had a documented prior outpatient offer where they refused vaccination?*
Response: Unfortunately, we are not able to reliably ascertain this information. In our electronic health records (EHR) system, vaccine refusal is documented variably in free text form within notes and is not a discrete data element identifiable in a unique space within the EMR (e.g. in the 'immunizations' section). Furthermore, the goal of this program was to create a unique opportunity for immunization for women who are either not immunized or have previously been immunized but, perhaps due to pregnancy, have not yet been able to complete the vaccine series.

Point 2*: The program utilized resource-intense patient navigators and text messaging-based patient reminders. It is possible that had these same resources been applied to the same women on an outpatient basis, the success of the program would have been similar. Are these resources used in the outpatient setting for women not participating in this program?*
Response: As a point of clarification, the program described in this paper *did not* use patient-navigators and text messaging-based reminders (336-43). In fact, we believe that the unique contribution of our paper and this program is that we did not utilize such resource-intense features, unlike previously published work we have referenced (336-38, Ref 32). We implemented this program after a series of evidence-based interventions had been introduced to optimize HPV immunization in the outpatient setting (Lines 339-44, Ref 29). The one additional resource that was utilized is a program coordinator to identify program-eligible patients. As we discuss in the Discussion section (Lines 366-75), this role is envisioned as a temporary role that we intend to phase out as we work with our hospital to transition from a pilot program to a system-wide program.

Point 3*: Successful vaccination for the first (and subsequent) doses in the series would be most revealing. This would be especially true had these women been offered vaccination prior to pregnancy and declined. Women who received their first dose prior to pregnancy and agreed to a second or third dose during their postpartum stay may just be manifesting a missed opportunity to complete their vaccination schedule rather than reluctance to vaccinate. This would also assume that enough time elapsed after their previous dose to get the next dose in the series before they became pregnant and lost that opportunity. Overcoming a failure to vaccinate due to missed opportunity is not as great an achievement in a captive audience during the postpartum stay as it would be in someone who was reluctant to vaccinate in the first place.*
Response: We agree that successful completion of the vaccine series is an important marker. As can be seen in Table 1, even among women who had previously received 2 doses of the HPV vaccine, receiving the inpatient dose facilitated completion of the series compared with not receiving the inpatient dose. At the same time, there are several studies that show overcoming missed opportunities to vaccine is a significant clinical and public health achievement (see Holman et.al., JAMA, 2014). Missed clinical opportunities to recommend and administer HPV vaccine are one of the most important reasons for the low uptake in the United States. Importantly, the goal of this project was not to address vaccine hesitancy. Rather, the goal of this study was to create the infrastructure that would allow clinicians to capitalize on the postpartum hospital admission to address an otherwise missed opportunity to immunize.

Point 4*: It would be helpful to know the rates of vaccination per vaccination opportunity between the IPP-HPV group and those who did not have inpatient vaccination. Also, were more of the women in the IPP-HPV group vaccinated at the first opportunity or subsequent opportunities? This might help*

distinguish whether subsequent vaccinations were due to a greater number of vaccination opportunities in the IPP-HPV group.
Response: The length of follow-up for the group varied, with women who delivered in earlier years having a longer duration of follow-up. Furthermore, the timing of subsequent visits, and the number of outpatient visits for each patient also varied. For these reasons, we used survival analysis (Kaplan Meier) methods to determine the probability of receiving subsequent doses after discharge. The Kaplan Meier curve in Figure 2 details what the reviewer is requesting. In addition, we have revised the analysis of missed opportunities (Lines 299-301): "On average, there were 30.7 fewer (95% CI 5.8–55.6, $p<0.02$) MOs for every 100 eligible visits among women who received the inpatient dose compared with those that did not (83.2 vs 52.5 MOs per 100 visits, respectively).

Reviewer #2:

Point 1: *The authors could consider mentioning more explicitly that fewer of the women who had received one dose of HPV vaccine previously (17%) managed to complete the series vs 25% of women who had never received a dose prior to their inpatient dose.*
Response: Thank you for this comment. To clarify, based on Figure 1, 34% of women who had received one prior dose of HPV vaccine completed the vaccine series (11 IPP-HPV recipients + 3 non-recipients/41) compared to 19% of women who had received no prior doses (53 IPP-HPV recipients +7 non-recipients/316). In the group that had received 1 prior dose, in addition to the 7 women who received their 3rd dose, there are 7 other women (5 IPP-HPV recipients and 2 non-recipients) who were vaccine series complete after 2 doses as they had received their first dose at less than 15 years of age and met criteria for the 2-dose schedule (noted in the text between "received 2nd dose" and "received 3rd dose" boxes).

We have revised Figure 1 to make clearer the numbers of women that completed the vaccine series.

Point 2: *Line 135: The authors mention CDC recommendations for administration of HPV vaccine up until age 45 later in the paper, but I would suggest mentioning it in the introduction and clarifying that adults up until age 45 may receive the vaccine. The authors should also consider stating why they limited vaccine administration to age 26 (which is a perfectly reasonable approach given the limited number of vaccines available in the program, but mentioning this may clarify the reason that a choice was made to choose that age limit).*
Response: Thank you for this comment. We had limited the wording previously as "catch-up vaccination for all adults up through age 26 years" as "catch-up" is for all adults and through age 26 years as of the MMWR report published in August 2019 (Ref 1) which reconciled the sex-based discrepancy of the previous "catch-up" recommendation. The shared clinical decision-making recommendation for adults 27-45 years old is distinct and the CDC does not use the phrase "catch-up" for this group and we have added a reference from the CDC on this terminology (Ref 2). However, we have revised the statement in the introduction (Lines 139-41): "Catch-up immunization is recommended for all adults through age 26 years while shared clinical decision-making is recommended for HPV immunization of adults aged 27-45 years.(1,2)"

We have also added an explanation in the Methods as to why the IPP-HPV program limited immunization to age 26 years by adding (Lines 173-75): "The recommendation for shared decision-making on HPV immunization with adults 27-45 years old occurred more than 2 years after initiation of IPP-HPV and, given limited vaccine supply, program eligibility criteria was not changed."

Point 3: *Line 145-146: should be reworded for improved flow to start with "Administration of the HPV vaccine is not recommended during pregnancy"*
Response: We have revised per these suggestions (Line 144).

Point 4: *Line 150: should read "have been more widely implemented"*
Response: We have revised per these suggestions (Line 148).

Point 5: *Line 158: can you clarify whether that efficacy of HPV vaccine is for women who had been previously exposed to a different strain of HPV or for all women?*
Response: The effectiveness reported in the cited study is among all women, irrespective of prior HPV-type exposure. We have revised the sentence by adding (Line 159): "…irrespective of prior HPV-type exposure."

Point 6: *If possible, one thing to consider is whether the authors could analyze any correlation between likelihood of receiving TDAP/influenza vaccinations during pregnancy and HPV vaccine postpartum. Uptake of other vaccinations may predict receptivity to other recommended vaccines.*
Response: We did ascertain whether HPV vaccine eligible women were also eligible for Tdap and influenza vaccine and whether they were also given the vaccine. We have added this data in the results section (Lines 273-77): "Among the 394 women eligible for IPP-HPV, 52 (13.2%) were due for a Tdap vaccine, of which 15 (28.8%) received it during their postpartum hospitalization. Similarly, 67 (17.0%) women were due for an influenza vaccine, of which 21 (31.3%) received it during their postpartum hospitalization. Receipt of Tdap or influenza vaccine was not significantly correlated with receipt of IPP-HPV vaccine (OR 2.11; 95% CI 0.60–7.38 and OR 1.33; 95% CI 0.47–3.77, respectively)."

Reviewer #3:
Point 1: *Given data supporting excellent immunity at 9 years of age please consider listing this age in the introduction (instead of 11 & 12). Additionally, it is FDA approved up to age 45.*
Response: Thank you for this comment. We were reporting on the ACIP routine recommendation but appreciate the importance of communicating the lower age range as well and have revised accordingly (Lines 138-39): "Since 2006, HPV vaccine has been recommended for children starting as early as age 9, with routine immunization at 11 to 12 years old."

We were referencing the ACIP/CDC recommendations in the line that follows (not FDA approval) and specifically the wording regarding "catch-up vaccination" as defined by ACIP/CDC. However, per this reviewer's suggestion and Reviewer #2/Point 2 suggestion we have revised accordingly (Lines 139-41): "Catch-up immunization is recommended for all adults through age 26 years while shared clinical decision-making is recommended for HPV immunization of adults aged 27-45 years."

Point 2: *The introduction can be made short and move this information up to the beginning. List the benefits of the vaccine, poor uptake in the US and then your strategy.*
Response: We have removed most of the second to last paragraph from the introduction and shortened other parts. We believe specifically highlighting the premise of IPP-HPV (paragraph 2, Lines 148-55) and the effectiveness of HPV vaccine in women who have been sexually active (paragraph 3, Lines 156-63) are important to the introduction.

Point 3: *How was this effort distinct from the work done in this publication? One prior study has shown inpatient postpartum HPV immunization to be feasible and acceptable under a research protocol.(19) Please address in the discussion.*
Response: Thank you for this comment. The study referenced examines an HPV immunization program

that was limited to postpartum women with no prior receipt of HPV vaccine, delivering between 32-44 weeks gestation, and administration of the vaccine required consent for participation in research. We have revised the discussion (Lines 323-26) to address this: "One study has shown inpatient postpartum HPV immunization to be feasible and acceptable under a research protocol.(30) However, a research consent was required of women to receive the vaccine and eligibility was limited to women delivering at ≥ 32 weeks gestation who had received no prior doses."

Point 4: *Why was this age cut of selected?*
"The program was available to patients less than 27 years old, who received prenatal care at the hospital-based ob-gyn clinic, and who were not up to date on their HPV vaccine series at the time of postpartum hospital admission."
Response: See above for response and revisions to Reviewer #2, Point 2.

Point 5: *Were vaccine registries reviewed to confirm eligibility?*
Response: No, as the vaccine registry in Connecticut only includes vaccines up through age 2 with an initial transition to begin to capture vaccines through age 18 years that began only in late 2018, although state regulations only require entries up to age 2. We have revised the discussion to more explicitly state this (Line 382): "Without an immunization registry that extends beyond age 2, accurate determination of vaccine history remains challenging."

Point 6: *Is this person sustainable? This person seems to be doing a portion of the work done by a navigator? "The program coordinator identified patients eligible for IPP-HPV on a daily basis by reviewing the 194 inpatient postpartum roster for practice site and patient age. The coordinator reviewed the immunization 195 history of patients meeting program eligibility criteria to determine whether the patient was adequately 196 immunized, and then informed the on-call clinician of all IPP-HPV eligible patients for that day."*
Response: Thank you for this comment. We believe the program coordinator's role is distinct from that of a patient navigator as the coordinator does not interact with patients at any point. We also recognize that a program coordinator role is still resource-intense and therefore has been intended as a stepping stone for this pilot program. In proceeding with next-step scaling up efforts, we acknowledge that such a role will need to be removed. We have accordingly added to the discussion (Line 366-74):
"Additionally, the role of a program coordinator can also be a barrier to sustainability. The success of this pilot program, however, has laid the groundwork for a significant investment by the hospital system to explore, develop, and implement an adapted version of the IPP-HPV program that will be both sustainable and accessible to all vaccine-eligible women delivering in the Yale New Haven Health System, the largest healthcare provider in Connecticut. The adapted program is expected to leverage the electronic health record and health informatics in the creation of a "virtual outpatient immunization clinic" to scale up IPP-HPV, eliminate the need for a program coordinator, and allow for the vaccine to be charged for and covered as an outpatient insurance benefit thereby eliminating reliance on an external supply of vaccine."

Point 7: *Please address in the discussion issues of cost, reimbursement and sustainability or ongoing scaling up of these efforts given that the vaccine was donated.*
Response: We appreciate the importance of these issues and as such had addressed them in the discussion (Lines 360-374). We have further added (Line 370): "The adapted program is expected to leverage the electronic health record and health informatics in the creation of a "virtual outpatient immunization clinic" to scale up the program, eliminate the need for a program coordinator, and allow for the vaccine to be charged for and covered as an outpatient insurance benefit thereby eliminating reliance on an external supply of vaccine.

Point 8: *Please mention these interventions briefly in the abstract: "Clinicians providing prenatal care were informed about this new program prior to its initiation at monthly 208 staff meetings and were encouraged to discuss IPP-HPV with eligible patients as part of prenatal care 209 in the third trimester."*
Response: Thank you for this comment. We have added to the first line of the abstract methods (Line 113): "In this cohort study, we present results from the first two years of IPP-HPV, in which HPV vaccine-eligible postpartum women were identified and immunized during their hospital stay. IPP-HPV was implemented following educational outreach with prenatal and postpartum clinicians and nurses."

Point 9: *Why was this time period selected? In the analysis section 12 months follow up is required but in the methods it mentions some women were only followed for 6 months?*
Response: As this program is ongoing, there is no end date. At the time of this analysis, IPP-HPV had been ongoing for 30 months. We only included women who were followed for at least 6 months (first 24 months of program) to allow sufficient time to reasonably complete the series. Those that delivered earlier in the 2-year period were followed for longer than those that delivered at the end of the 2-year period. We chose 6-months as that is the earliest window of time in which a patient who had received the first dose of HPV vaccine while inpatient could conceivably have completed the vaccine series. For some analyses (e.g. time-to-event analysis), contribution of varying amounts of time was not a concern, while for other analyses (Table 2, Receipt of Subsequent Outpatient Doses), we restricted the analysis to the first 12 months following delivery among those who delivered at least 12 months from the end of our data collection period so that all included in that analysis had been followed for the same amount of time.

Point 10: *Why was this cut off selected? Does the clinic not provide the vaccine up to age 45? "…if they aged out of eligibility for the HPV vaccine (27 years of age), or at the end of the study if they did not receive any additional doses of the vaccine after discharge."*
Response: The ACIP's recommendation for shared clinical decision-making for HPV immunization in adults 27-45 years old was published in August 2019. Therefore, for the vast majority of the study period, there was no recommendation to vaccinate that age group and, without an ACIP recommendation, insurance coverage for outpatient doses was also unclear.

We have added a sentence about the timing of this recommendation (Lines 173): "The recommendation for shared decision-making on HPV immunization with adults 27-45 years old occurred more than 2 years after initiation of IPP-HPV and, given limited vaccine supply, program eligibility criteria was not changed."

Point 11: *What were these: After adjusting for possible confounding factors?*
Response: We have described how the multivariable models were built in the Methods section, Lines 211-219 and also footnoted at the bottom of Tables 1 and 2. In the manuscript, we refer to variables that were included in multiple logistic regression models as "potential confounders". We recognize that this might be confusing terminology. Thus, to provide more clarity on this issue, we have removed language of "potential confounders" and instead refer to adjustments for other "significant covariates."

Point 12: *When possible add the number of participants to the text, for example: Women who had received 2 prior doses of the vaccine before their hospital admission were more likely to...*
Response: We have added the absolute numbers throughout the manuscript.

Point 13: *Does the following finding have to do with your intervention or is this a property of these persons who are not as apt to adhere with vaccination guidelines?*
"Women who had received a dose of HPV vaccine while inpatient had a significantly higher probability of receiving subsequent outpatient doses of HPV vaccine compared to those who did not receive the inpatient dose (HR 2.51, 95% confidence interval (CI) 1.76 to 3.58). Kaplan-Meier curves for this analysis are shown in Figure 2."
Response: As this is an observational study, we are unable to evaluate the cause for the associations identified in this study. There are plausible mechanisms by which the program could have facilitated those patients who received the IPP-HPV dose to also have received subsequent outpatient doses (direct patient education, documentation in the electronic health record alerting/reminding outpatient clinicians to complete the vaccine series).

Point 14: *It is unclear if the researchers initially wanted 12 months of follow up or they found interesting results when the extended the follow up from 6 to 12? 7 Of the women eligible for IPP-HPV who had not completed their vaccine series at hospital discharge, 295 women were able to contribute at least 12 months of follow up time from delivery to the end of the study period (Table 2)*
Response: See response to Reviewer #3, Point 10. Follow up for 12 months was pre-planned and this time frame is common in studies looking at rates of HPV immunization given that even when strict adherence to dose intervals is followed, a 6-month time period is required for vaccine series completion.

Point 15: *Consider removing the 12-month data as it only revealed associations that diminished with adjustment for confounders?*
Response: Thank you for this comment. We believe showing associations that were not statistically significant for these variables holds value and is data readers would want to see in understanding factors associated with receipt of subsequent outpatient doses.

Point 16: *Why is this a pilot? Address consistently throughout the manuscript and directly describe in the introduction n evaluation of a pilot quality*
Response: We have revised the methods section (Line 170-73) to indicate that as a pilot program, IPP-HPV was limited to patients from a single clinic. The discussion (Lines 366-74) describe how the pilot will be transitioned to a sustainable, scaled up program.

Point 17: *How is this population high risk? Are these groups uniquely affected by HPV burden or lack the benefit of the vaccine (access, provision, education)? in a high-risk young adult population*
Response: Thank you for this comment. We have revised the sentence as follows (Line 303): "The goals of this program were to increase rates of HPV immunization in a young adult population at high risk for HPV-associated disease…"

Point 18: *This is novel but it was through a donation program: to create a new opportunity for immunization that did not previously exist and thereby decrease missed opportunities*
Response: The data and experience gained from this program is facilitating scale-up as described in the discussion (Lines 366-74) and serves as an important demonstration project for other hospitals and healthcare systems that are also looking to create this new opportunity, especially if they already have HPV vaccine on inpatient formulary or the resources to be able to add to their formulary which is context-specific (by hospital/health care system and/or state) as added in the discussion to Line 380.

Point 19: *There were no processing or administrative changes made to maintain stock or access?*
Response: A new inpatient order for HPV vaccine had to be created in the EHR and responsibility for managing the stock was given to investigational drug service given the unique non-formulary, grant-

based vaccine doses. We have added these details to the methods section (Lines 190-92): "A new inpatient order for HPV vaccine was created in the EHR and the vaccine stock was managed by the hospital's investigational pharmacy, given the non-formulary, grant-based vaccine supply."

Point 20: *What does this manuscript uniquely add to the literature that was not part of the following publication? The University of Texas Medical Branch (UTMB) Texas is the only other such program we are aware of that routinely provides HPV vaccine to postpartum women less than 27 years of age prior to hospital discharge.(20)*
Response: We have discussed differences in the programs and patient populations between the UTMB program and our program in the discussion (Lines 332-43). Most notably, our overall cohort was better vaccinated with at least one dose of HPV vaccine and vaccine series complete prior to pregnancy. In addition, we report on the effects of a program that did not rely on resource-intense outpatient text messaging and patient navigation.

Point 21: *Please make sure these are addressed in the methods:*
These additional steps included updates on the patient electronic health record problem list if the patient would need additional doses of HPV vaccine following hospital discharge, and intermittent reminders to outpatient clinicians both to discuss the opportunity for postpartum HPV immunization as part of antenatal care and to review HPV immunization history during visits following delivery to facilitate completion of the HPV vaccine series.
Response: We describe the education and guidance provided to outpatient antenatal and postpartum clinicians in Lines 197-203 in the Methods section. We have added Lines 202-03 as well: "Intermittent reminders were provided to outpatient clinicians to maintain both prenatal and postpartum discussions of HPV immunization."

Point 22: *Also refer to them in the abstract methods.*
Response: We appreciate this suggestion, however, describing the various components of the IPP-HPV program in the abstract, given word limits, is not possible. We have revised the first sentence of the methods as follows (Lines 113-115): "In this cohort study, we present results from the first two years of IPP-HPV, in which HPV vaccine-eligible postpartum women were identified and immunized during their hospital stay. IPP-HPV was implemented following educational outreach with prenatal and postpartum clinicians and nurses."

Point 23: *Consider putting this in the introduction: benefit of vaccine, poor uptake in US (with disparities), and then the benefit of bundling vaccine administration into the post partum hospitalization care.*
Response: The introduction includes these topics.

Point 24: *Do your results support this? "Even among women who did not receive the inpatient dose of HPV vaccine, there may have been some benefit due to the positive messaging about the vaccine which may have impacted the likelihood of receiving it at a subsequent outpatient visit." Is they do suggest this then clearly state that for the reader.*
Response: This is simply conjecture in the discussion section, which is why we say "may" have been of some benefit.

Point 25: *Thank you for your discussion of cost, however it is not clear to me what the proposed solution is or why that age cut off was determined.*
Response: We have added Lines 370-374 to further describe a potential solution: "The adapted program is expected to leverage the electronic health record and health informatics in the creation of a "virtual

outpatient immunization clinic" to scale up IPP-HPV, eliminate the need for a program coordinator, and allow for the vaccine to be charged for and covered as an outpatient insurance benefit thereby eliminating reliance on an external supply of vaccine."

The age cut off concern has been explained earlier and addressed by addition of Lines 173-75: "The recommendation for shared decision-making on HPV immunization with adults 27-45 years old occurred more than 2 years after initiation of IPP-HPV and, given limited vaccine supply, program eligibility criteria was not changed."

Point 26: *Why were the vaccine complete persons included in the cohort? This intervention did not impact them? Were they a kind of comparator group?*
Response: We have removed the summation in Figure 1 that included the cohort that was vaccine series complete prior to delivery.

Point 27: *The number is figure 1 are slightly different than the numbers in the following tables. Unfortunately, it was not intuitive or clear to me why they should be differed.*
Given IPP Dose, N= 265 Not Given IPP Dose, N=129
Response: Figure 1 represents a different and important set of information from what is presented in Tables 1 and 2. We have significantly revised Figure 1 to make the numbers clearer. The 265 is signified by the left side of the figure in the boxes that include "(as inpatient)" that identifies the number of patients that received each dose as an inpatient (207+27+31).

Reviewer #4
Point 1: *Please place 95% CIs around your p values so the reader knows the precision of your measurements*
Response: Thank you for this comment. We have revised all reported measurements accordingly.

Point 2: *Globally- I would like the authors to address the validity of offering the vaccine to patients who are postpartum- clearly they have been exposed to HPV if they are pregnant so is this globally futile? I am not saying that it is- but it should be addressed. It is addressed in the intro but lost in discussion.*
Response: We have added discussion of HPV immunization among women who have been sexually active, specifically that most women have only been exposed to a few HPV types and therefore remain susceptible to several other HPV types that the 9-valent vaccine protects against (Lines 320-23): "Although it is most effective to immunize children and adolescents prior to initiation of sexual activity, individuals who have been sexually active can still benefit from catch-up immunization with HPV vaccine. This is particularly important with 9vHPV, as most women have only been exposed to 1-2 HPV types and remain susceptible to several types that the current vaccine protects against (30)."

Point 3: *Line 266- please remove that they women were single as this has no bearing on their HPV status*
Response: We have removed this descriptor.

Point 4: *Line 276 why are you describing this cohort as "Spanish speaking", while I understand that this grouping encompasses an ethnically diverse group, Spanish speaking is not a broadly define ethnic group .....I would refer to as hispanic or latinx*
Response: Thank you for this comment. We did not intend for "Spanish speaking" to indicate ethnicity and instead it represents a preferred language variable distinct from a race/ethnicity variable as described in Lines 219 and 258. We have revised the wording to avoid confusion (Lines 261-65): "Hispanic women were significantly more likely to receive an inpatient dose of the HPV vaccine (OR 2.14; 95% CI 1.07-4.30), as were women identifying Spanish as their preferred language (OR 3.03; 95% CI 1.69-

5.42). After adjusting for significant covariates, women with a preferred language of Spanish were still more likely to receive an inpatient dose (aOR 2.84; 95% CI 1.41-5.67)."

Point 5: *The missed opportunities section should be moved to be part of the discussion section*
Response: The information presented in the missed opportunities section is results from our data analysis. We are unclear about the suggestion to move to the discussion section.

Point 6: *Was there any thought to drawing blood to determine the antigenic response in these women? I know that is likely outside the scope but would be interesting to know (maybe another study)*
Response: Thank you for this comment. We agree this is important work for a future study to demonstrate that the antibody response among postpartum women is noninferior to that of nonpregnant individuals.

Point 7: *The discussion while well written is a bit verbose. Some of the information presented could be cut out or moved to intro.*
Response: Thank you for this comment. We have revised the discussion to make it more succinct.

Statistical Editor
Point 1: *line 116: 394/666 = 59%, not 60%*
Response: Revisions made accordingly (Line 120).

Point 2: *lines 128-129: "highly effective" is over stating the results. While the rate of completing all 3 doses was more than doubled (22.3% vs 9.3%), the actual "success" rate, by that metric, was only 22%.*
Response: Thank you for this comment. The conclusion has been revised as follows (Lines 130-32): "The IPP-HPV program had an important effect on rates of immunization and addressed a previously missed opportunity."

Point 3: *Tables 1, 2: Should include the formats: median(IQR) and N(%) as footnotes instead of stating the format with each row characteristic. Should cite ORs and aORs with CIs and omit the p-values. Should state the referent for age, is it per year? For some of the aORs, likely the models are overfitted, due to small counts, e.g., "multirace", "other" marital status.*
Response: Thank you for these comments. We have adjusted the table format, added CIs, omitted p-values, added the referent for age as suggested.

Editor Comments
Point 1: *107. It is an idiosyncratic fact that at the Journal we tend to avoid the use of the word impact to imply the result of a change, preferring to limit "impact" to mean a physical blow.*
Response: We have replaced "impact" with the word "effect" throughout the paper.

Point 2: *110: in the methods section, can you tell us a bit about the IPP-HPV? How does it work? you have some of this information in the discussion section where you discuss billing issues, etc. Please concisely report the process in the methods section.*
Response: The first three paragraphs of the methods section currently include details of the program and how it works which we have further revised to include additional details (Lines 169-96). We have added information about IPP-HPV to the abstract as well (Lines 113-15): "In this cohort study, we present results from the first two years of IPP-HPV, in which HPV vaccine-eligible postpartum women were identified and immunized during their hospital stay. IPP-HPV was implemented following educational outreach with prenatal and postpartum clinicians and nurses."

Point 3: *118: Can you present this a little more clearly and always present data with denominators so the reader knows exactly who is included. So you had 394 eligible women and of these, 264/394 (67%) received one dose; then tell us yy/264 (22.3%) received the 2nd dose. Did you have any women who had previously received the first dose and you gave the 2nd dose to them during their inpatient post partum stay?*

Response: Thank you for this comment. We have added numerators and denominators to this data as suggested in the abstract. We have added the information about patients that became vaccine series complete by receiving the inpatient dose (n=36). In doing so, we noted an error in calculation for proportion vaccine series complete among those that received the IPP-HPV dose (95/265), where the 95 is 36 + 59 (# vaccine series complete by receiving subsequent outpatient doses). See Lines (121-129): "The majority (265/394, 67.3%) received the IPP-HPV dose, resulting in series completion for 36 women (13.6%). Among women due for additional doses after hospital discharge, those who received the inpatient dose were significantly more likely to receive a subsequent outpatient dose (138/229) compared with those who did not receive an IPP-HPV dose (39/129; hazard ratio: 2.51, 95% CI 1.76 to 3.58). On average, there were 30.7 fewer (95% CI 5.8–55.6, $p<0.02$) missed opportunities for subsequent outpatient doses for every 100 eligible visits among women who received the inpatient dose compared with women who did not. By the end of the study, the proportion who had completed the vaccine series was significantly higher (26.5%, 95% CI 17.6-35.5) among women that received the inpatient dose (95/265, 35.8%) than in those who did not (12/129, 9.3%)."

Point 4: *116 and in the main body of the manuscript and tables:*
P Values vs Effect Size and Confidence Intervals
While P values are a central part of inference testing in statistics, when cited alone, often the strength of the conclusion can be misunderstood. Whenever possible, 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.
This is true for the abstract as well as the manuscript, tables and figures. We much prefer Confidence intervals; p values are unnecessary when you have the CI's.

Please provide absolute values for variables, in addition to assessment of statistical significance.

We ask that you provide crude OR's followed by adjusted OR's for all relevant variables.

Please limit p values to 3 decimal places.
Response: We have stated effect size with CIs wherever possible through the abstract, main body of manuscript and tables. We have also added absolute values throughout.

Point 5: *122. Where did 358 come from? 358/394=91% of the eligible women who received a dose in the hospital. You reported on line 118 that the rate was 67%. I'd like to encourage you to consider presenting your data in a different way as I'm confused about how many had prior dose then got complete series in hospital vs who got first dose and then you followed for 12 months. Give some over all statistics then break it down by first dose vs second dose in hospital; did you follow women who did NOT get IPP-HPV to see if they got any vaccinated during the following year?*
Response: 36 patients completed the vaccine series by receiving the IPP-HPV dose (394-36 = 358). These 358 patients were followed for the year: the 229 that received IPP-HPV and the 129 that did not.

We have revised the abstract as follows (Lines 121-22): "The majority (265/394, 67.3%) received the IPP-HPV dose, 36 (13.6%) of whom completed the series with that dose."
We have also revised this sentence (Lines 122-125) for further clarification: "Among women due for additional doses after hospital discharge, those who received the IPP-HPV dose were significantly more likely to receive a subsequent outpatient dose (138/229) than were those who did not receive an IPP-HPV dose (39/129; Hazard ratio: 2.51, 95% CI 1.76 to 3.58)."

We have added similar clarification in the results section (Lines 245-254).

Point 6: *136 "that cause 85%...."*
Response: Revision has been made.

Point 7: *139. "vaccine coverage" sounds like an insurance benefit. Do you mean "vaccine administration"?*
Response: Revision has been made as suggested to replace "coverage" with "administration".

Point 8: *160. Please spell out CDC (use the full name) on first use as with all abbreviations. Does the USPSTF say anything about this?*
Response: CDC is now spelled out on first use (Line 161). USPSTF does not provide recommendations on vaccines which are left to the purview of the Advisory Council on Immunization Practices (ACIP) as part of the CDC.

Point 9: *Your paper can be made more concise. For instance, the introduction should be about 1 page—it is almost 2 full pages. Your discussion likewise should be trimmed by at least 1/3.*
Response: We have shortened the introduction and discussion as suggested.

Point 10: *183, 173: you do not need to tell us where and when twice. Pick one.*
Response: Thank you for pointing this out. We have removed the first reference and retained the when/where information in the Methods section (Line 169).

Point 11: *202. Did the Merck grant pay for the 2nd dose as an outpatient also? Is Merck the entire name of the company?*
Response: The Merck grant only covered the inpatient doses of HPV vaccine. We have revised the company's name to "Merck & Co., Inc." in its first appearance in the paper (Lines 190)

Point 12: *203: please tell us the appropriate interval between dose 1 and dose 2.*
Response: We have stated the vaccine dose intervals for 2- and 3-dose schedules and indications for each schedule (Lines 195-196): "We used the 2-dose schedule (0, 6-12 months) for individuals who received their first dose < 15 years old and the 3-dose schedule (0, 1-2 months, 6 months) for all others per CDC guidelines (1)."

Point 13: *273. You did not do a prediction study; these are associations. Please change the wording throughout.*
Response: We have changed the wording to reflect analysis of associations.

Point 14: *280. We do not allow authors to describe variables or outcomes in terms that imply a difference (such us of the terms "trend" or "tendency" or "marginally different") unless there is a statistical difference. Please edit here and throughout to indicate that there is no difference.*

Response: We have revised the description of the IPP-HPV dose with respect to insurance type accordingly, (Lines 270-71): "There was no significant difference in receipt of vaccine when comparing women with private or no insurance to those with public insurance."

Point 15: *298. the women didn't "contribute" this time; you had this much follow up time in the EMR.*
Response: We have revised the wording in this sentence and removed "contribute" (Line 284-85).

Point 16: *321. I don't understand the importance of this statement. Gardisil can be given on a 2 dose schedule with doses 6-12 months apart or a 3 dose schedule at 0, 2 and 6 months. Which dosing schedule did you give? Looks like from Figure 1, you use the 3 dose schedule. Why? I realize you are trying to get at missed opportunities here. How did you determine eligibility for another dose? By neither schedule would they have been eligible at their post partum visit. Do you know if they were offered the dose or declined it when they returned? Were these visits to OB GYN clinics or any clinic in our system. So the women who got Gardisil were seen more often in the 2-12 months after delivery hospitalization. So what? Did that translate into more vaccines?*
Response*:* Thank you for these comments. The 2-dose schedule is for individuals who received their first dose at less than 15 years of age. Only 7 patients met that criteria which we had indicated in Figure 1 however we have revised Figure 1 to make that clearer.

The 3-dose schedule is 0, 1-2 months, and 6 months. We have revised the methods section to describe these vaccine schedules (Lines 195-96)

In calculating missed opportunities, we utilized the definitions of missed opportunity and vaccine-eligible visit as described in Lines 231-34 in the method section. We have revised these definitions, revised the missed opportunity analysis and the corresponding description of the analysis to provide further clarification (Lines 230-233).

The results presented in the missed opportunities section have been revised accordingly and presented more clearly: Lines 295-300: "Among the 358 women who remained vaccine eligible after discharge, 222 (62.0%) had a vaccine eligible clinical encounter in the 12-month follow-up period. Of these, the number of women who had at least one MO was significantly lower (23.4%, 95%CI: 9.4%–23.3%) in the subgroup that received IPP-HPV (75/154, 48.7%) than in those who did not (49/68; 72.1%). On average, there were 30.7 fewer (95% CI 5.8–55.6, $p<0.02$) MOs for every 100 eligible visits among women who received the inpatient dose compared with those that did not (83.2 vs 52.5 MOs per 100 visits, respectively)."

Point 17: *356. The comparison to UTMB program is incomplete. Are these rates numerically different only or is there a statistical difference? Is 67% meaningfully different than 75%? It seems to me that both programs achieved similar results.*
Response: Thank you for this comment. We have revised this sentence to indicate that while slightly lower, the proportions of uptake are clinically similar (Lines 329-31): The proportion of eligible women who received the inpatient dose in our program (67.3%) was similar although slightly lower than that (75.4%) reported by investigators at UTMB.

Point 18: *370. First time you've mentioned anything about outpatient work flows.*
Response: We describe the education and guidance provided to outpatient prenatal and postpartum clinicians in Lines 197-203 in the Methods section. We have added Lines 202-203 as well: "Intermittent reminders were provided to outpatient clinicians to maintain both antenatal and postpartum discussions of HPV immunization."

Point 19: *385. Preferring Spanish and English what? I know what you mean but you need to say what you mean.*
Response: We have revised the wording to state “preferred language of Spanish” and “preferred language of Spanish English” (Lines 348-50).