HRP-503B – BIOMEDICAL RESEARCH PROTOCOL

NCT02994290

Protocol Title: Evaluation of the Implementation and Effectiveness of a Pilot Quality Improvement Program to Increase HPV Vaccine Uptake: Inpatient Postpartum HPV Immunization Program

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Version Date: 5.14.21

(*If applicable*) Clinicaltrials.gov Registration #: N/A

INSTRUCTIONS

This template is intended to help investigators prepare a protocol that includes all of the necessary information needed by the IRB to determine whether a study meets approval criteria. **Read the following instructions before proceeding:**

1. Use this protocol template for a PI initiated study that includes direct interactions with research subjects. Additional templates for other types of research protocols are available in the system Library.

2. If a section or question does not apply to your research study, type "Not Applicable" underneath.

3. Once completed, upload your protocol in the "Basic Information" screen in IRES IRB system.

1. **Probable Duration of Project:** State the expected duration of the project, including all follow-up and data analysis activities.
   November 2016-~~November 2019~~November 2023

2. Does this study have a Clinical Trials Agreement (CTA)?
   Yes☐ **No**☒
   a. If so, does it require compliance with ICH GCP (E6)?
   Yes☐ **No**☐

3. Will this study have a billable service? **Yes** ☐ **No**☒

A billable service is defined as any service rendered to a study subject that, if he/she was not on a study, would normally generate a bill from either Yale-New Haven Hospital or Yale Medical Group to the patient or the patient's insurer. The service may or may not be performed by the research staff on your study, but may be provided by professionals within either Yale-New Haven Hospital or Yale Medical Group (examples include x-rays, MRIs, CT scans, specimens sent to central labs, or specimens sent to pathology). Notes: 1. There is no distinction made whether the service is paid for by the subject or their insurance (Standard of Care) or by the study's funding mechanism (Research Sponsored). 2. This generally includes new services or orders placed in EPIC for research subjects.

If answered, "yes", this study will need to be set up in OnCore, Yale's clinical research management system, for Epic to appropriately route research related charges. Please contact oncore.support@yale.edu

4. Are there any procedures involved in this protocol that will be performed at YNHH or one of its affiliated entities? **Yes** ☐ **No** ☒

If Yes, please answer questions a through c and note instructions below.
a. Does your YNHH privilege delineation currently include the **specific procedure** that you will perform? **Yes** ☐ **No** ☐
b. Will you be using any new equipment or equipment that you have not used in the past for this procedure? **Yes** ☐ **No** ☐
c. Will a novel approach using existing equipment be applied? **Yes** ☐ **No** ☐

If you answered "no" to question 4a, or "yes" to question 4b or c, please contact the YNHH Department of Physician Services (688-2615) for prior approval before commencing with your research protocol.

IMPORTANT REMINDER ABOUT RESEARCH AT YNHH

Please note that if this protocol includes Yale-New Haven Hospital patients, including patients at the HRU, the Principal Investigator and any co-investigators who are physicians or mid-level practitioners (includes PAs, APRNs, psychologists and speech pathologists) who may have direct patient contact with patients on YNHH premises must have medical staff appointment and appropriate clinical privileges at

YNHH. If you are uncertain whether the study personnel meet the criteria, please telephone the Physician Services Department at 203-688-2615. **By submitting this protocol as a PI, you attest that you and any co-investigator who may have patient contact has a medical staff appointment and appropriate clinical privileges at YNHH.**

SECTION I: RESEARCH PLAN

1. **Statement of Purpose:** State the scientific aim(s) of the study, or the hypotheses to be tested.

   Specific Aims

   - Aim 1: To evaluate receptivity and concerns of postpartum women with receiving the HPV vaccine during the inpatient postpartum admission as part of the Inpatient Postpartum HPV Immunization Quality Improvement Program (IPP-HPV) [see appendix].
   - Aim 2: To evaluate receptivity and concerns of healthcare providers with inpatient postpartum HPV immunization as part of IPP-HPV and to identify facilitators of and barriers to its implementation.
   - Aim 3: To assess the uptake and effectiveness of a Pilot Quality Improvement Program to increase HPV vaccine uptake (IPP-HPV) for Yale New Haven Hospital (YNHH) Women's Center and Center for Women's Health and Midwifery (CWHM) postpartum patients ≤ 26 years of age who deliver at YNHH York Street Campus (YSC) or Saint Raphael Campus (SRC).
   - Aim 4: To identify the processes utilized to integrate delivery of vaccines that are currently administered routinely during inpatient postpartum care
   - Aim 5: To iteratively develop an EMR-based tool that promotes integration of IPP-HPV immunization into routine inpatient postpartum care

2. **Background:** Describe the background information that led to the plan for this project. Provide references to support the expectation of obtaining useful scientific data.

   Cervical cancer, the most common cancer attributable to HPV infection, is diagnosed in approximately 12,000 women annually in the U.S. and leads to 4,200 deaths a year. Disparities continue to persist in the incidence and mortality rates of cervical cancer; Black women are most likely to die from and Hispanic women are most likely to get cervical cancer. In addition, HPV infection causes 330,000 new cases of precancerous high-grade cervical dysplasia annually. The direct medical costs in the U.S. associated with both screening for and treating HPV-associated diseases is estimated to be $8.0 billion dollars, over 80% of which is for routine cervical cancer screening and follow-up, with an additional $1 billion for cancer treatment and $36 million for treatment of genital warts.

   With the availability of Gardasil vaccine as a 3-dose regimen since 2006, there has been a unique opportunity to prevent infection from HPV types that cause most cervical cancers. The HPV vaccine is recommended for routine administration to 11-12 year olds, with catch-up vaccination recommended through age 26 years, as vaccination prior to onset of sexual activity is optimal. However, even among women who have been sexually active, it has been shown that a substantial burden of disease can still be prevented.[1-3] For example, results from one vaccine efficacy trial with average follow up of 2.9 years in a mixed population of HPV-exposed and unexposed 15-25 years

old women found effectiveness against precancerous lesions of moderate grade or worse (CIN2+) to be 30.4%.[1] The study also demonstrated a 24.7% reduction in the number of cervical excision procedures for the treatment of precancerous cervical lesions in this cohort.1 However, studies have shown low rates of initiation (60%) and of completion (40%) of the HPV vaccine series among adolescent females in the United States.[4] Rates of initiation (30%) and of completion (13%) are even lower for young adult women aged 18-26 years.[5,6] Among young adult women eligible for HPV vaccine, pregnancy is one factor significantly associated with not completing the vaccine series since the vaccine is not recommended during pregnancy.[7]

Rationale & Significance

Administration of the HPV vaccine during the inpatient postpartum hospital stay has the potential to be an innovative intervention to improve HPV immunization rates. Following onset of pregnancy, the postpartum period becomes the next available opportunity to immunize with the HPV vaccine, which is safe in breastfeeding women. The benefits of such an intervention include a focus on women engaged with the health care system who are often highly motivated to invest in their personal health.

Currently, the HPV vaccine is not routinely available to postpartum women during their inpatient admission. However, by utilizing the immediate postpartum period when women are already in the hospital, we take advantage of access to patients and reduce the number of additional visits needed to complete the vaccine. Immunization of postpartum women on the inpatient floor is already standard practice for women who need Tdap, influenza or MMR vaccines and these programs are associated with increased rates of immunization.[8,9]

Investigators have found that in a predominantly Hispanic population of postpartum women in southeast Texas with a low rate of HPV immunization, there was a high degree of willingness to receive the vaccine if offered free of charge.[10] One small study evaluated inpatient postpartum HPV immunization (IPP-HPV) in a selective patient population and, although it was successful with 95% uptake of the HPV vaccine during the postpartum admission, full vaccine series completion was 30%.[11] With attention to outpatient followup infrastructure, Berenson et al recently have shown that a standard of care inpatient postpartum vaccination program can increase initiation and completion rates.[12] Studies to date have not evaluated the process of clinical implementation of IPP-HPV nor identified facilitators of or barriers to the intervention to improve its effectiveness. Evaluating the implementation process systematically to investigate and address bottlenecks is critical for the successful promotion and integration of new approaches in the delivery of evidence-based practices.

The purpose of the proposed pilot study is to assess the implementation of IPP-HPV immunization at YNHH and to identify potential barriers to and facilitators of this intervention to optimize its feasibility and effectiveness. It is imperative that we develop innovative interventions to achieve comprehensive utilization of this highly effective vaccine to reduce rates of HPV infection, lower rates of cervical and other HPV-associated cancers, and address cancer disparities.

References

1. Paavonen J, Naud P, Salmeron J, et al. Efficacy of human papillomavirus (HPV)-16/18 AS04-adjuvanted vaccine against cervical infection and precancer caused by oncogenic HPV types (PATRICIA): final analysis of a double-blind randomized trial in young women. Lancet 2009;374:301-314.
2. Munoz N, Kjaer SK, Sigurdsson K, et al. Impact of human papillomavirus (HPV)-6/11/16/18 vaccine on all HPV-associated genital diseases in young women. J Natl Cancer Inst 2010;102:325–39.
3. Skinner RS, Szarewski A, Romanowski B, et al. Efficacy, safety, and immunogenicity of the human papillomavirus 16/18 AS04-adjuvanted vaccine in women older than 25 years: 4-year interim follow-up of the phase 3, double-blind, randomized controlled VIVIANE study. Lancet 2014;384:2213-27.
4. CDC. National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13-17 Years – United States, 2014. MMWR 2015;64:784-792.
5. Williams WW, Peng-Jun L, Saraiya M, et al. Factors associated with human papillomavirus vaccination among young adult women in the United States. Vaccine 2013;31:2937-46.
6. Laz TH, Rahman M, Berenson AB. Human papillomavirus vaccine uptake among 18- to 26-year old women in the United States. Cancer 2013;119:1386-92.
7. Perry R, Rankin K, Yu MC, Harwood B. Factors associated with human papillomavirus vaccination completion on a catch-up schedule. Obstet Gynecol 2014;124:76-81.
8. Beigi RH, Fortner KB, Munoz FM, et al. Maternal immunization: opportunities for scientific advancement. Clin Infect Dis 2014;59:S408-14.
9. Centers for Disease Control and Prevention. Pregnant women and flu vaccination, internet panel survey, United States, November 2013. Available at:http://www.cdc.gov/flu/fluvaxview/pregnant-women-nov2013.htm Accessed 13 February 2015.
10. Berenson AB, Male E, Lee TG, et al. Assessing the need for and acceptability of a free-of-charge postpartum HPV vaccination program. Am J Obstet Gynecol 2014;210:213.e1-7.
11. Wright JD, Govindappagari S, Pawar N, et al. Acceptance and compliance with postpartum human papillomavirus vaccination. Obstet Gynecol 2012;120:771-82.
12. Berenson AB, Rahman M, Hirth J, Rupp RE, Sarpong KO. A human papillomavirus vaccination program for low-income postpartum women. Am J Obstet Gynecol 2016;215:318.e1-9.

3. **Research Plan:** Summarize the study design and research procedures using non-technical language that can be readily understood by someone outside the discipline. **Be sure to distinguish between standard of care vs. research procedures when applicable, and include any flowcharts of visits specifying their individual times and lengths**. Describe the setting in which the research will take place.

1.1 Overview

We propose a mixed methods study that will evaluate the implementation process of the Inpatient postpartum HPV Immunization Quality Improvement Program (IPP-HPV) using 9-valent HPV vaccine for postpartum YNHH Women's Center patients to increase the rate of HPV vaccination. We will also study the effectiveness of the program to improve HPV vaccine series completion. The study will utilize qualitative patient and provider interviews as well as a medical records for data collection to identify facilitators of and barriers to successful implementation of IPP-HPV. Study of the quality improvement program may help translate what has been a missed opportunity to vaccinate into a potential national model for a public health intervention that could prevent cervical cancer.

1.2 Specific Aim 1

To evaluate receptivity and concerns of postpartum women with receiving the HPV vaccine during the inpatient postpartum admission as part of the Inpatient Postpartum HPV Immunization Quality Improvement Program (IPP-HPV).

1.2.1 **Study participants:** Patients participating in the IPP-HPV Program and fluent in either English or Spanish will be eligible to enroll in this qualitative study.

1.2.2 **Study design:**

Study Enrollment and Consent: After the vaccine is administered (or the patient declines the vaccine), a member of the research team (RA) will approach eligible postpartum women and invite them to participate in individual in-depth interviews. The RA will obtain informed consent (see attached) from women willing to participate. If an in-person interview prior to hospital discharge is not possible, the RA will contact patients by phone within 2 weeks of hospital discharge and explain study purpose and interview and subjects will be given option to participate in a phone interview. In the case of a phone interview, informed consent will be sent to patient electronically via encrypted email, reviewed over phone and patient will electronically sign and return consent before proceeding with the interview. If patient is unable to sign consent electronically, they will be given option to sign it in person during their next postpartum encounter at the Women's Center and then have the option of being interviewed before or after their clinic encounter that day or via a follow up phone call. If unable to reach the patient by phone, we will approach the patient at her Women's Center postpartum appointment after obtaining permission from her visit provider and invite the patient to participate in an interview. The RA will obtain consent at that time from women willing to participate. After being consented, he patient will have the option of being interviewed before or after their clinic encounter that day or via a follow up phone call. A $25 *Visa* card will be provided as an incentive to women who participate.

Sampling: We will select a purposive sample of postpartum women into two groups: those who receive inpatient HPV vaccine and those who decline the inpatient dose to interview until we reach thematic saturation which we anticipate to occur with about 8-10 individuals per group. Patients will be selected to include diverse representation in age, race, ethnicity, and parity.

1.2.3 **Data collection:** We will conduct in-person, in-depth interviews prior to discharge home from the postpartum hospitalization. If an in-person interview prior to discharge is not possible, we will conduct phone interviews or interview at the outpatient postpartum visit as described above. We will conduct interviews using a semi-structured guide (see attached) with questions based on Consolidated Framework for Implementation Research (CFIR) constructs. We will maintain an open-ended format that allows the interviewer to probe with questions as needed to engage participants to use their own words to express experiences. We will focus on CFIR constructs belonging to domains we consider to be most relevant to IPP-HPV implementation from the patients' perspective: *Intervention Characteristics* (e.g., perceived advantages and adaptability of the intervention) and *Characteristics of Individuals* (e.g., knowledge and beliefs about the intervention).

1.2.4 **Data analysis:** All interviews will be recorded and subsequently transcribed. We will analyze transcripts and determine common themes and priority domains. Standard analytic methods for qualitative data will be employed. A codebook will be developed based on deductive (theory-driven) constructs from the interview guide and applied to a subset of transcripts. Concordance will be measured and discrepant

codes resolved by adjudication using software for qualitative research. We will identify and discuss initial themes and identify inductive (data-driven) codes. The identification of inductive codes will continue with subsequent coding in an iterative manner. Results will be shared and discussed with other investigators for final analysis and interpretation to determine what changes can be made (incorporating findings from Aim 2 as well) to improve the IPP-HPV intervention for future implementation.

1.3 Specific Aim 2

To evaluate receptivity and concerns of healthcare providers with inpatient postpartum HPV immunization as part of IPP-HPV and to identify facilitators of and barriers to its implementation.

1.3.1 Study participants: YNHH inpatient and Women's Center outpatient postpartum nurses and obstetric providers affiliated with the Women's Center or Center for Women's Health and Midwifery, including nursing and medical directors, will be eligible to participate.

1.3.2 Study design:

Study Enrollment and Consent: Postpartum nurses and providers will be invited to participate in individual in-depth interviews about their perceptions of IPP-HPV. All participants will receive informed consent (see attached) and a $25 *VISA* card will be provided as an incentive to providers that participate.

Sampling: We will aim to have a purposive sample with representation by provider type and clinical setting/location.

1.3.3 Data collection: The in-depth individual interviews will be conducted using a semi-structured guide (see attached) based on Consolidated Framework for Implementation Research (CFIR) constructs. We will focus on CFIR constructs belonging to domains which we consider to be most relevant to IPP-HPV implementation from the providers' perspective: *Intervention Characteristics* (e.g., perceived advantages and adaptability of the intervention), the *Inner Setting* (e.g., structural and cultural contexts within the clinical setting), and *Characteristics of Individuals* (e.g., knowledge and beliefs about the intervention).

1.3.4 Data analysis: Recorded interviews will be transcribed and transcripts analyzed using standard analytic methods for qualitative data as described above (see Aim 2). Provider receptivity of IPP-HPV and perceptions of patient acceptance will be categorized by themes. Perceived barriers to and facilitators of IPP-HPV will be described and will further inform future implementation of IPP-HPV. Demographic data about postpartum providers will be tabulated. Quantitative data from the pre- and post-intervention provider surveys will be tabulated and differences compared using bivariate analysis.

1.4 Specific Aim 3

To assess the uptake and effectiveness of a Pilot Quality Improvement Program to increase HPV vaccine uptake (IPP-HPV) for Yale New Haven Hospital (YNHH) Women's Center and Center for Women's Health and Midwifery (CWHM) postpartum patients ≤ 26 years of age who deliver at YNHH
York Street Campus (YSC) or Saint Raphael Campus (SRC).

1.4.1 **Study participants:** Women's Center and CWHM postpartum patients ≤ 26 years of age who have received less than 3 doses of the HPV vaccine prior to delivery and who deliver at YNHH YSC or SRC during the two years of the IPP-HPV Program as well as Women's Center and CWHM postpartum patients ≤ 26 years of age who delivered at YNHH YSC/SRC in the year preceding implementation of the IPP-HPV Program.

1.4.2 **Study design:** Medical record review from above patients to review each patient's immunization record and related clinical visits in the 30 months after delivery.

1.4.3 **Data Collection:**

The following data will be recorded from the chart (i.e., MRN, name, diagnosis):

- MRN
- Patient ID
- Name
- DOB
- Race
- Ethnicity
- Marital status
- Religion
- Primary Language
- Education
- Zip Code
- Insurance Type (Payor Name, Benefit Class, Benefit Plan Name)
- Smoking Status
- Gravidity
- Parity
- HIV status
- Allergies
- Number of clinic visits to WC or CWHM during 30 months following delivery
- Provider Name
- Provider Type
- Dates of visits
- Visit type
- HPV vaccination status at each encounter
- Dates that each HPV vaccine was ordered.
- Vaccine Type (i.e., quadrivalent vs 9-valent, etc)
- Vaccine number/rank (#1, 2, or 3 in the series)
- Name of provider who ordered each vaccine.
- Date that each HPV vaccine was administered.
- Were any other vaccines administered during the 30 months following delivery?
- If yes, which ones and on what dates?
- Were any other injectable medications administered during the study period?
- If yes, which ones and on what dates?

- Was HPV vaccine due?
- Was HPV vaccine offered/discussed?
- Was HPV vaccine ordered?
- Was HPV vaccine administered?
- Was HPV vaccine declined?
- If declined, what was the reason for decline?
- Were other postpartum vaccines (Tdap, flu, MMR) due? Administered/declined?

Measures that will be used from the IPP-HPV program to assess its implementation will include number of women eligible for HPV vaccine, proportion accepting a dose of HPV vaccine while inpatient, proportion who agree to be vaccinated but do not receive the vaccine dose, and identification of possible barriers to implementation of IPP-HPV (e.g., nurses are too busy, patients leave prior to vaccine administration, vaccine order not placed). In addition, we will abstract data from questionnaires voluntarily submitted by postpartum nurses to the IPP-HPV Program on their experience with each patient related to HPV immunization.

We will obtain data on receipt of subsequent doses of vaccine and on completion of the 3-dose series of the vaccine by medical chart review. Dates of receipt of HPV vaccine, date of postpartum visit, and data on whether a dose of HPV vaccine was due at the postpartum visit and, if so, whether dose was received will be recorded. Data on the need for and receipt of postpartum Tdap, influenza and rubella vaccines will also be obtained from medical chart review for comparison. Demographic and clinical information will also be obtained. Historical data on the HPV vaccination history of all WC patients ≤ 26 years old who delivered in the 12 months prior to implementation of IPP-HPV will also be collected for comparison of their rates of vaccine series completion (from outpatient administration) within 30 months of delivery.

1.4.4 **Data analysis:** We will tabulate measures as follows:

- IPP-HPV Acceptance: Proportion of eligible patients agreeing to receive a dose of vaccine
- HPV Vaccine Administration: Proportion of eligible patients that agree to be vaccinated who actually receive dose of vaccine as an inpatient.
- Barriers to vaccination: descriptive data on potential barriers to receiving the vaccine postpartum
- Other vaccines: Proportion of eligible patients due for Tdap, influenza or MMR vaccines and proportion that receive each

To assess the effectiveness of the pilot IPP-HPV immunization program we will tabulate the proportion of postpartum women eligible for the vaccine who receive a dose of HPV vaccine, the proportion of participants that need 1, 2, or 3 vaccine doses that receive the respective number of doses within up to 30 months of postpartum discharge, the proportion of all participants that complete the vaccine series within 12 months and within 30 months, and the proportion of study participants that complete the vaccine series within 12 months and within 30 months that received IPP-HPV.

Multivariable logistic regression will be used to determine predictors of inpatient postpartum HPV vaccine uptake and of vaccine completion (e.g., age, parity, race, ethnicity). The difference in proportion of women who complete the 3-dose series within 12 months and within 30 months of postpartum discharge in the study cohort and in the group of Women's Center patients who delivered in the 12 months prior to implementation of IPP-HPV will be compared using chi square analysis.

1.5 Specific Aim 4

1.5.1 Study participants:

1) Observational Workflow Analysis-- Inpatient OB providers and inpatient OB nurses from the York Street and Saint Raphael YNHH campuses;

2) In-depth Individual Interviews-- Four groups of participants from both YNHH campuses, including inpatient OB providers, inpatient OB nurses, hospital pharmacy representatives and EMR analysts

1.5.2 Study design:

1) Observational Workflow Analysis--Conduct workflow analysis with direct observation of inpatient OB providers and nurses to develop process maps that will detail the current varying practices and methods used to integrate administration of other vaccines into routine inpatient postpartum care. Observations will include details pertaining to specific tasks, events, actions and time/duration. *Sampling:* We will aim to have a purposive sample with representation by provider type and location.

2) In-depth Individual Interview--Representatives from 4 stakeholder groups—Inpatient OB providers, inpatient OB nurses, hospital pharmacy representatives and EMR analysts—will be invited to participate in individual in-depth in person,or phone/video (Zoom) when in person is not possible, interviews to ascertain the strengths and problems with the current workflow processes from all perspectives. All participants will receive verbal informed consent (see attached) and a $25 *VISA* card will be mailed or dropped off at their work office as an incentive to providers that participate. *Sampling:* We will aim to have a purposive sample with representation by provider type and location.

1.5.3 Data Collection:

1) Observational Workflow Analysis- The observation workflow analysis will be conducted utilizing an open-ended observational guide (see attached) and will include the following topics to be observed and documented in detail (as they pertain to provider status):
    a. Assessment of patient's immunization status
    b. Placing vaccine order(s)
    c. Vaccine administration and documentation

The observations will remain open-ended to allow the observer to document detailed fieldnotes on events, actions and their time/duration and capture variations in workflow.

As part of the observational workflow analysis, screenshots will be taken of where clinical information is being documented, in a way that does not capture any patient PHI (i.e. blank data fields before data is inputted).

2) In-depth Individual Interview-- The in-depth individual interviews will be conducted in person, or by phone/video (Zoom) when in person is not possible, using a semi-structured guide (see attached) and cover the following topics:
    a. Perceived bottlenecks and facilitators to postpartum immunization workflows
    b. Potential benefits and obstacles with any existing EMR-based tools for postpartum vaccines (e.g. flowsheet, integrated order set)
    c. Thoughts on postpartum vaccine workflow tasks that are redundant or could be streamlined
    d. Thoughts on postpartum vaccine workflow gaps that need to be addressed

Interviews will also maintain an open-ended question format to allow the interviewer to probe with follow-up questions or elaboration or clarification. Follow-up questions will be asked to engage participants to use their own words to express their perspectives on the strengths and problems with the existing postpartum vaccine work-flow process.

1.5.4 Data Analysis:

1) Observational Workflow Analysis-Field notes will be transcribed using a digital writing system.
2) In-depth Individual Interview-- Recorded interviews will be transcribed, and transcripts analyzed using standard analytic methods for qualitative data as described above (see Aim 2).

Data from the workflow analysis and individual interviews will be analyzed using well-established qualitative data analysis methods. We will initially approach thematic analysis using the principles of grounded theory. The PI/study team will inductively code the workflow and interview data using the constant comparative method to identify concepts and themes that emerge within each group, and that are "grounded" in the actions and views of the participants This methodology involves using labels (i.e. codes) to iteratively categorize text and observations of participants into concepts and themes. We will use Dedoose (version 7.0.23, SocioCultural Research Consultants, LLC, 2016, Los Angeles, CA) for data management. The coded data will be used to iteratively develop process maps for each vaccine and to identify gaps in the process to guide subsequent observations. The maps will also indicate process variations and identify steps in which EMR tools are utilized. The process maps and interview data will be reviewed by the PI to guide development of a process map for IPP-HPV immunization. Data collection and analysis will occur over a 12-month period.

1.6 Specific Aim 5

1.6.1 **Study Participants:** Individual interviews will be conducted in person or by phone/video (Zoom) when in person is not possible with the 4 stakeholder groups—inpatient OB providers, inpatient OB nurses, hospital pharmacy representatives, and EMR analysts—from across YNHHS. In addition, a voluntary survey will be distributed to participants from all stakeholder groups in YNHHS to assess the knowledge, attitudes and beliefs about HPV vaccine and about IPP-HPV.

Study Design: Individual interview topics for Aim 5 will be conducted at the same time as the interview performed in Aim 4. The voluntary anonymous survey will be distributed as a QR code and/or web-based survey link to all potential participants as part of the training and education of quality improvement program materials at each YNHHS delivery network site. All participants will receive informed consent prior to continuing with the survey and have the option to enroll in raffle to receive a $50 *VISA* card as an incentive for participation.

1.6.2 **Data Collection:** In-depth, semi structured, individual interviews will be conducted with each participant described above. The semi-structured interview guide will cover the following topics and questions will be asked in a way to engage participants to use their own words to express their needs and preferences related to an EMR-based tool for IPP-HPV immunization.

A) Potential benefits and obstacles with various EMR-based tool formats for IPP-HVP (e.g. flowsheet, integrated order set, electronic chart)
B) Timing of when tool should activate and how often
C) How intrusive tool should be (e.g. electronic alert, mandatory components)
D) Preferences and perceived strengths and problems with Nurse vs Pharmacy-driven IPP-HPV immunization workflow
E) Preferences for additional features (e.g. automated fax of vaccine administration to PCP, automated population of vaccine administration to patient discharge documents, option to order & hold future subsequent vaccine doses.

1.6.3 **Data Collection for survey:** The knowledge, attitudes and beliefs of IPP-HPV by OB healthcare workers within the YNHHS will be assessed. The survey will highlight any concerns, expectations, and the amount of HPV vaccine knowledge held by obstetric providers. Questions will be asked in various formats, such as multiple choice, true and false questions, and 5-point Likert scale questions.

1.6.4 **Data analysis:** Recorded interviews will be transcribed, and transcripts analyzed using standard analytic methods for qualitative data as stated in Aim 4 (1.5.4). Survey data will be reviewed in aggregate and by YNHHS Delivery Network with descriptive, bivariate and multivariate analysis of survey responses.

4. Genetic Testing N/A ☒

A. Describe

i. the types of future research to be conducted using the materials, specifying if immortalization of cell lines, whole exome or genome sequencing, genome wide association studies, or animal studies are planned

ii. the plan for the collection of material or the conditions under which material will be received
iii. the types of information about the donor/individual contributors that will be entered into a database
iv. the methods to uphold confidentiality

B. What are the conditions or procedures for sharing of materials and/or distributing for future research projects?
C. Is widespread sharing of materials planned?
D. When and under what conditions will materials be stripped of all identifiers?
E. Can donor-subjects withdraw their materials at any time, and/or withdraw the identifiers that connect them to their materials?
i. How will requests to withdraw materials be handled (e.g., material no longer identified: that is, anonymized) or material destroyed)?

F. Describe the provisions for protection of participant privacy
G. Describe the methods for the security of storage and sharing of materials

5. **Subject Population:** Provide a detailed description of the types of human subjects who will be recruited into this study.

- **Specific Aim 1**
  To evaluate receptivity and concerns of postpartum women with receiving the HPV vaccine during the inpatient postpartum admission as part of the Inpatient Postpartum HPV Immunization Quality Improvement Program (IPP-HPV).
  Study participants: Postpartum women participating in the IPP-HPV Quality Improvement Program and fluent in either English or Spanish will be eligible to enroll in this qualitative study. We will select a purposive sample of postpartum women into two groups: those who receive inpatient HPV vaccine and those who decline the inpatient dose to interview until we reach thematic saturation which we anticipate to occur with about 8-10 individuals per group. Patients will be selected to include diverse representation in age, race, ethnicity, and parity.

  Specific Aim 2
  To evaluate receptivity and concerns of healthcare providers with inpatient postpartum HPV immunization as part of IPP-HPV and to identify facilitators of and barriers to its implementation.
  Study participants: YNHH inpatient and Women's Center outpatient postpartum nurses, and obstetric providers affiliated with the Women's Center or Center for Women's Health and Midwifery, including nursing and medical directors, will be eligible to participate. We will aim to have a purposive sample of about 15 participants with representation by provider type and clinical setting/location.

  Specific Aim 3
  To assess the uptake and effectiveness of a Pilot Quality Improvement Program to increase HPV vaccine uptake (IPP-HPV) for Yale New Haven Hospital (YNHH) Women's Center and Center for Women's Health and Midwifery (CWHM) postpartum patients ≤ 26 years of age who deliver at YNHH
  York Street Campus (YSC) or Saint Raphael Campus (SRC).
  Study participants: Women's Center and CWHM postpartum patients ≤ 26 years of age who have received less than 3 doses of the HPV vaccine prior to delivery and who deliver at YNHH YSC or SRC during the first year of the IPP-HPV Program as well as Women's Center and CWHM postpartum patients ≤ 26 years of age who delivered at YNHH YSC/SRC in the year preceding implementation of the IPP-HPV Program.

  Specific Aim 4
  To identify the processes utilized to integrate delivery of vaccines that are currently administered routinely during inpatient postpartum care
  Study participants: Observational workflow analysis-YNHH (YSC or SRC) inpatient postpartum nurses or inpatient obstetric providers; In-depth individual interviews--YNHH

(YSC or SRC) inpatient postpartum nurses, inpatient obstetric providers, hospital pharmacy representatives or EMR analysts

Specific Aim 5
To iteratively develop an EMR-based tool that promotes integration of IPP-HPV immunization into routine inpatient postpartum care and conduct a survey prior to implementation of IPP-HPV to assesses the knowledge, attitudes and beliefs of HPV vaccine and IPP-HPV by OB healthcare workers across YNHHS.
Study participants: YNHHS inpatient postpartum nurses, inpatient obstetric providers, hospital pharmacy representatives or EMR analysts

6. **Subject classification:** Check off all classifications of subjects that will be specifically recruited for enrollment in the research project. Will subjects who may require additional safeguards or other considerations be enrolled in the study? If so, identify the population of subjects requiring special safeguards and provide a justification for their involvement.

☐ Children	☐ Healthy	☐ Fetal material, placenta, or dead fetus
☒ Non-English Speaking	☐ Prisoners	☐ Economically disadvantaged persons
☐ Decisionally Impaired	☒ Employees	☐ Pregnant women and/or fetuses
☐ Yale Students	☒ Females of childbearing potential	

NOTE: Is this research proposal designed to enroll children who are wards of the state as potential subjects? **Yes** ☐ **No** ☒

7. **Inclusion/Exclusion Criteria:** What are the criteria used to determine subject inclusion or exclusion?
Specific Aim 1: Patient Qualitative Interviews
Inclusion:
   - Women participating in the IPP-HPV Quality Improvement Program:
     - Postpartum YNHH Women's Center and CWHM patients
     - ≤ 26 years at time of delivery who deliver at YNHH YSC or SRC
     - Have not already received 3 doses of the HPV vaccine at time of delivery
   - Fluent in English or Spanish
   - Able and willing to provide consent

Specific Aim 2: Provider Qualitative Interviews
Inclusion:
   - YNHH inpatient postpartum nurses or Women's Center outpatient postpartum nurses or inpatient or outpatient obstetric providers affiliated with the Women's Center or Center for Women's Health and Midwifery
   - Able and willing to provide consent

Specific Aim 3: Medical Records Review
Inclusion:
   - Yale New Haven Hospital (YNHH) Women's Center and Center for Women's Health

and Midwifery (CWHM) postpartum patients

- ≤ 26 years of age
- Delivered at YNHH York Street Campus (YSC) or Saint Raphael Campus (SRC) in the first year of the IPP-HPV program or in the one year preceding implementation of the program

Specific Aim 4:
Observational Workflow Analysis
Inclusion:

- YNHH (YSC or SRC) inpatient postpartum nurses or inpatient obstetric providers

Provider/Staff Qualitative
Interviews Inclusion:

- YNHH (YSC or SRC) inpatient postpartum nurses, inpatient obstetric providers, hospital pharmacy representatives or EMR analysts
- Able and willing to provide consent

Specific Aim 5: Provider/Staff Qualitative
Interviews Inclusion:

- YNHHS inpatient postpartum nurses, inpatient obstetric providers, hospital pharmacy representatives or EMR analysts
- Able and willing to provide consent

Survey Inclusion:

- YNHHS OB healthcare workers

Able and willing to provide consent

8. How will **eligibility** be determined, and by whom?
   Eligibility will be determined by the Project Coordinator and Research Assistants. They will be trained in study protocol including eligibility criteria by the PI. They will complete human subjects training. They will work closely with nurses and providers on the postpartum floor or at the clinic (Specific Aim 1: Patient interviews) or with Staffing Supervisors (Specific Aim 2, 4 & 5: Provider interviews) to ensure recruitment is appropriate, sensitive, and non-coercive.

9. **Risks:** Describe the reasonably foreseeable risks, including risks to subject privacy, discomforts, or inconveniences associated with subjects participating in the research.
   Participation in this study is considered to be minimal risk. There will be no physical, financial, or legal risks to subjects as a result of participating in this study. One potential risk to study participants is in disclosing personal information to members of the research team during the interview that may be upsetting. Another potential risk is loss of confidentiality. Medical records will only be utilized to extract defined variables for research purposes. There are no other risks to patients, who will not be contacted in the course of the study, and whose care will not be impacted in any way. Both of these risks are unlikely to occur, but will be minimized as described below.

10. **Minimizing Risks:** Describe the manner in which the above-mentioned risks will be minimized.

Aims 1 and 2: In the event that subjects were to find completing the interview distressing, they would be reminded that they are free to not respond to any questions and/or terminate the interview

at any time. Referrals for services (medical and social) will be provided as necessary. Because participants are being recruited from a clinical setting, such services are known to investigators and referrals can be facilitated. Decisions on whether or not to continue participation in this study will in no way affect the provision of medical care on the postpartum floor or in the outpatient clinic for patient participants or employment for provider participants. Interviewers will also be fully trained in non-judgmental interactions and counseling and referral if participants become distressed during the course of this study.

Aim 3: The risk associated with this portion of the study is potential breach of confidentiality. There are no other risks to patients, who will not be contacted in the course of the study, and whose care will not be impacted in any way. Medical records will only be utilized to extract defined variables for research purposes.

Aims 4 and 5: In the event that subjects were to find completing the interview or survey distressing, they would be reminded that they are free to not respond to any questions and/or terminate the interview/survey at any time. Decisions on whether or not to continue participation in this study will in no way affect employment for provider and hospital staff participants. Interviewers will also be fully trained in non-judgmental interactions and counseling and referral if participants become distressed during the course of this study.

A number of precautions will be actively integrated into study procedures to protect confidentiality. (1) For the qualitative data analysis, all data will be presented anonymously. Themes and quotes will be designated by the race/ethnicity, preferred language, age of patient, outpatient obstetrics site, and HPV vaccination completion status only, as these are the key variables of interest. Participants will be assured that the information they provide will not be linked to them as individuals in any study reports, publication or presentations. (2) All quantitative data will be analyzed collectively so that information from any individual will remain anonymous. (3) Study participants will be protected by having all information obtained by the research staff designated by a unique study identification number only, assigned to the participant at the time of his or her entry into the study. Only this code and no identifying information (e.g. names) will be maintained in data files. A separate master list of names and medical record numbers along with study identification numbers will be maintained in a password protected computer file. Access to the computers and data files stored on other media (e.g. flash drives) will be limited both physically (e.g. in locked offices) and electronically (e.g. on encrypted computers). All data files will be password protected and stored on a secure server. All paper records including consent forms will be kept in locked file cabinets. (4) The information obtained will be used for the purposes of data analysis only. (5) Upon completion of the data collection phase, the data will be "de-identified" meaning that the identifying information (namely medical record number) will be separated from the clinical variables collected. The prompt removal of identifying information will help to limit the risk of breaches of confidentiality. Once all data analysis has been completed, the master list containing the patient's medical record number will be destroyed in a manner approved by Yale for materials containing sensitive patient health information.

11. **Data and Safety Monitoring Plan:** Include an appropriate Data and Safety Monitoring Plan (DSMP) based on the investigator's risk assessment stated below. (Note: the HIC will make the final determination of the risk to subjects.)

a. What is the investigator's assessment of the overall risk level for subjects participating in this study? Minimal

b. If children are involved, what is the investigator's assessment of the overall risk level for the children participating in this study?

Minimal (postpartum patients < 18 years old will be asked to provide assent and parents will provide consent to participate in interviews)

c. Include an appropriate Data and Safety Monitoring Plan. Examples of DSMPs are available here http://www.yale.edu/hrpp/forms-templates/biomedical.html for

i. Minimal risk

The principal investigator is responsible for monitoring the data, assuring protocol compliance, and conducting the safety reviews quarterly. During the review process the principal investigator will evaluate whether the study should continue unchanged, require modification/amendment, or close to enrollment. The principal investigator or the Institutional Review Board (IRB) have the authority to stop or suspend the study or require modifications.

This protocol presents minimal risks to the subjects and Unanticipated Problems Involving Risks to Subjects or Others (UPIRSOs), including adverse events, are not anticipated. In the unlikely event that such events occur, Reportable Events (which are events that are serious or life-threatening and unanticipated (or anticipated but occurring with a greater frequency than expected) and possibly, probably, or definitely related) or Unanticipated Problems Involving Risks to Subjects or Others that may require a temporary or permanent interruption of study activities will be reported immediately (if possible), followed by a written report within 5 calendar days of the Principal Investigator becoming aware of the event to the IRB (using the appropriate forms from the website) and any appropriate funding and regulatory agencies. The investigator will apprise fellow investigators and study personnel of all UPIRSOs and adverse events that occur during the conduct of this research project through regular study meetings and via email as they are reviewed by the principal investigator. After consultation with the HIC and YCCI, the funding agency (NCATS/NIH) will be informed of adverse events within 5 days of the event becoming known to the principal investigator.

d. For multi-site studies for which the Yale PI serves as the lead investigator: N/A

i. How will adverse events and unanticipated problems involving risks to subjects or others be reported, reviewed and managed?

ii. What provisions are in place for management of interim results?

iii. What will the multi-site process be for protocol modifications?

12. **Statistical Considerations:** Describe the statistical analyses that support the study design.

Specific Aim 1:

All interviews will be recorded and subsequently transcribed. We will analyze transcripts and determine common themes and priority domains. Standard analytic methods for qualitative data will be employed.[15] A codebook will be developed based on deductive (theory-driven) constructs from the interview guide and applied to a subset of transcripts. Concordance will be measured and discrepant codes resolved by adjudication using software for qualitative research. We will identify and discuss initial themes and identify inductive (data-driven) codes. The identification of inductive codes will continue with subsequent coding in an iterative manner. Results will be shared

and discussed with other investigators for final analysis and interpretation to determine what changes can be made (incorporating findings from Aim 2 as well) to improve the IPP-HPV intervention for future implementation.

Specific Aim 2:
Recorded interviews will be transcribed and transcripts analyzed using standard analytic methods for qualitative data as described above (see Aim 2). Provider receptivity of IPP-HPV and perceptions of patient acceptance will be categorized by themes. Perceived barriers to and facilitators of IPP-HPV will be described and will further inform future implementation of IPP-HPV. Demographic data about postpartum providers will be tabulated. Quantitative data from the pre- and post-intervention provider surveys will be tabulated and differences compared using bivariate analysis.

Specific Aim 3:

We will tabulate measures as follows:

- IPP-HPV Acceptance: Proportion of eligible patients agreeing to receive a dose of vaccine
- HPV Vaccine Administration: Proportion of eligible patients that agree to be vaccinated who actually receive dose of vaccine as an inpatient.
- Barriers to vaccination: descriptive data on potential barriers to receiving the vaccine postpartum
- Other vaccines: Proportion of eligible patients due for Tdap, influenza or MMR vaccines and proportion that receive each

To assess the effectiveness of the pilot IPP-HPV immunization program we will tabulate the proportion of postpartum women eligible for the vaccine who receive a dose of HPV vaccine, the proportion of participants that need 1, 2, or 3 vaccine doses that receive the respective number of doses within 12 months of postpartum discharge, the proportion of all participants that complete the vaccine series within 12 months, and the proportion of study participants that complete the vaccine series within 12 months that received IPP-HPV.

Multivariable logistic regression will be used to determine predictors of inpatient postpartum HPV vaccine uptake and of vaccine completion (e.g., age, parity, race, ethnicity). The difference in proportion of women who complete the 3-dose series within 12 months of postpartum discharge in the study cohort and in the group of Women's Center patients who delivered in the 12 months prior to implementation of IPP-HPV will be compared using chi square analysis.

Specific Aim 4:
All workflow analysis and individual interviews and will be recorded and subsequently transcribed. We will analyze transcripts and determine common themes and priority domains. Standard analytic methods for qualitative data will be employed.[15] A codebook will be developed based on deductive (theory-driven) constructs from the interview guide and applied to a subset of transcripts. Concordance will be measured and discrepant codes resolved by adjudication using software for qualitative research. We will identify and discuss initial themes and identify inductive

(data-driven) codes. The identification of inductive codes will continue with subsequent coding in an iterative manner. The coded data will be used to iteratively develop process maps for each vaccine and to identify gaps in the process to guide subsequent observations.55 The maps will also indicate process variations and identify steps in which EMR tools are utilized.

Specific Aim 5:
All individual interviews and will be recorded and subsequently transcribed. We will analyze transcripts and determine common themes and priority domains. Standard analytic methods for qualitative data will be employed.15 A codebook will be developed based on deductive (theory-driven) constructs from the interview guide and applied to a subset of transcripts. Concordance will be measured and discrepant codes resolved by adjudication using software for qualitative research. We will identify and discuss initial themes and identify inductive (data-driven) codes. The identification of inductive codes will continue with subsequent coding in an iterative manner. The coded data will be used to develop process maps for each vaccine and understand the needs and preferences of each provider group, as it relates to an EMR-based tool for IPP-HPV immunization.[51,52] All individual surveys will be recorded and kept anonymous. Participants will be provided a QR code to complete the survey using the Yale Qualtrics platform. We will analyze the knowledge, attitudes, and beliefs of participants in aggregate and by delivery network using descriptive statistics, bivariate and multivariate analyses.

SECTION II: RESEARCH INVOLVING DRUGS, BIOLOGICS, RADIOTRACERS, PLACEBOS AND DEVICES

If this section (or one of its parts, A or B) is not applicable, state N/A and delete the rest of the section.

N/A

SECTION III: RECRUITMENT/CONSENT AND ASSENT PROCEDURES

1. Targeted Enrollment: Give the number of subjects:

a. Targeted for enrollment at Yale for this protocol:
Specific Aim 1: 16-20 patient interviews
Specific Aim 2: 15 provider interviews
Specific Aim 3: 700 medical charts reviewed
Specific Aim 4: 15-20 unique observations and 15-20 interviews with OB providers and nurses and 8-10 interviews with hospital pharmacy and YNHH EMR representatives
Specific aim 5: 15-20 interviews with OB providers and nurses and 8-10 interviews with hospital pharmacy and YNHH EMR representatives. 50 completed surveys from OB related healthcare workers from each of #4 YNHHS sites.

b. If this is a multi-site study, give the total number of subjects targeted across all sites:
N/A

2. Indicate recruitment methods below. Attach copies of any recruitment materials that will be used.

☐ ☐
☒ ☐
☐ ☐
☐
☐

☒ Flyers	Internet/Web Postings	Radio
☐ Posters	Mass E-mail Solicitation	Telephone
☐ Letter	Departmental/Center Website	Television
☒ Medical Record Review*	Departmental/Center Research Boards	Newspaper
☐ Departmental/Center Newsletters	Web-Based Clinical Trial Registries	

☐ YCCI Recruitment database ☐ Clinicaltrials.gov Registry (do not send materials to HIC)
☒ Other (describe): Inpatient Postpartum HPV Immunization Program referrals; standing staff meetings

Recruitment materials will be developed and submitted to HIC for approval as an amendment prior to beginning study.

*** Requests for medical records should be made through JDAT as described at**
http://medicine.yale.edu/ycci/oncore/availableservices/datarequests/datarequests.aspx

3. Recruitment Procedures:
a. Describe how potential subjects will be identified.
b. Describe how potential subjects are contacted.
c. Who is recruiting potential subjects?

Aim 1: We will enroll a sample of postpartum patients by using postpartum nurse and Inpatient Postpartum HPV Immunization Program referrals and a review of medical charts to identify potentially eligible participants. We will meet with nurses and clinicians to describe the study's significance, purpose and procedures, answer questions, and provide recruitment fliers. Project staff who will be enrolling participants include Project Coordinator and Research Assistants. They will be trained in ethical protection of human subjects including non-coercive recruitment strategies.

Aim 2: We will enroll a sample of inpatient postpartum nurses and obstetrics providers from SRC and YSC and outpatient obstetrics nurses and providers from Women's Center and CWHM through email solicitation and announcements at staff meetings to invite participation. Project staff who will be enrolling participants include Project Coordinator and Research Assistants. They will be trained in ethical protection of human subjects including non-coercive recruitment strategies.

Aim 3: Through the Inpatient Postpartum HPV Immunization Program and JDAT, we will identify relevant medical records and obtain the data points as described previously.

Aim 4: We will enroll a sample of inpatient OB nurses and providers from SRC and YSC for the observational workflow analysis and a sample of the following 4 stake holder groups: OB nurses, OB providers, hospital pharmacy staff, and EMR analysts, through email solicitation and announcements at staff meetings to invite participation. Project staff who will be enrolling participants include Project Coordinator and Research Assistants. They will be trained in ethical protection of human subjects including non-coercive recruitment strategies.

Aim 5: We will enroll a sample of the following 4 stake holder groups: OB nurses, OB providers, hospital pharmacy staff, and EMR analysts, through email solicitation and announcements at staff meetings to invite participation. Project staff who will be enrolling participants include Project Coordinator and Research Assistants. They will be trained in ethical protection of human subjects including non-coercive recruitment strategies. We will distribute the online survey to any OB related healthcare workers willing to participate and complete the survey. Distribution of the online survey will take place at YNHHS sites as part of the training and education of quality improvement program materials at each site. The survey will be distributed as a QR code that will direct

participants to complete the survey on the Yale Qualtrics platform.

4. Assessment of Current Health Provider Relationship for HIPAA Consideration:

Does the Investigator or any member of the research team have a direct existing clinical relationship with any potential subject?

☐ Yes, all subjects
☒ Yes, some of the subjects
☐ No

If yes, describe the nature of this relationship.

The PI is a clinician in the Women's Center clinic. She may have participated in the care of some of the women included in the study, either directly or indirectly through resident supervision.

5. **Request for waiver of HIPAA authorization:** (When requesting a waiver of HIPAA Authorization for either the entire study, or for recruitment purposes only. Note: if you are collecting PHI as part of a phone or email screen, you must request a HIPAA waiver for recruitment purposes.)

Choose one:

☒ For entire study (Aim 3: Medical records review)

☐ For recruitment/screening purposes only

☐ For inclusion of non-English speaking subject if short form is being used and there is no translated HIPAA research authorization form available on the University's HIPAA website at hipaa.yale.edu.

i. Describe why it would be impracticable to obtain the subject's authorization for use/disclosure of this data:
It will not be possible to retrospectively reach and obtain authorization for medical chart review of all postpartum women from the Women's Center and CWHM who delivered in the year prior to or in the first year of implementation of the quality improvement program.

ii. If requesting a waiver of **signed** authorization, describe why it would be impracticable to obtain the subject's signed authorization for use/disclosure of this data:

The investigator assures that the protected health information for which a Waiver of Authorization has been requested will not be reused or disclosed to any person or entity other than those listed in this application, except as required by law, for authorized oversight of this research study, or as specifically approved for use in another study by an IRB.

Researchers are reminded that unauthorized disclosures of PHI to individuals outside of the Yale HIPAA-Covered entity must be accounted for in the "accounting for disclosures log", by subject name, purpose, date, recipients, and a description of information provided. Logs are to be forwarded to the Deputy HIPAA Privacy Officer.

6. **Process of Consent/Assent:** Describe the setting and conditions under which consent/assent will be obtained, including parental permission or surrogate permission and the steps taken to ensure subjects' independent decision-making.

Postpartum inpatient or outpatient nurses and clinicians will refer postpartum patients (and a parent/guardian if patient is <18 years of age) in the Inpatient Postpartum HPV Immunization Program who are interested in the study to project staff while Obstetrics Providers, Pharmacy staff and EMR analysts who are interested in the study will directly contact project staff; both will be screened for

eligibility, provided with an explanation of the study's purpose and procedures, given an opportunity to ask questions, and scheduled for an interview. Just prior to the interview, participants (or their parents if postpartum patient is <18 years of age) will first provide written consent after the consent form has been read to them and they have been given an opportunity to ask questions. During concerns for COVID-19 and the need for social-distancing precautions, verbal consent will be obtained for interviews conducted remotely by phone or Zoom. Consent that will include permission to conduct the interview and, for patient participants, permission to access clinic records to confirm vaccine histories. Participants will be given a copy of the consent form for their records. The entire process will be non-coercive. Participants will be given the name and phone number of the Principal Investigator to contact if they have any concerns.

7. **Evaluation of Subject(s) Capacity to Provide Informed Consent/Assent:** Indicate how the personnel obtaining consent will assess the potential subject's ability and capacity to consent to the research being proposed.

Study personnel will receive training in assessing a person's ability and capacity to obtain consent. First, they will complete all human subjects training. Second, they will meet and work with postpartum nurses and clinicians at YNHH to learn how to handle situations in which capacity is of concern. Postpartum nurses and clinicians will also be able to help identify patient participants for whom capacity may have been a concern during routine clinical care. Third, they will attend HIC training sessions as appropriate to learn more about the consent process.

8. **Non-English Speaking Subjects:** Explain provisions in place to ensure comprehension for research involving non-English speaking subjects. If enrollment of these subjects is anticipated, translated copies of all consent materials must be submitted for approval prior to use.

   All study materials will be translated into Spanish and consent will be obtained by and interviews conducted by a fluent Spanish speaker or with the assistance of a Spanish interpreter. Spanish consent is included in this application and any additional potential forms will be submitted to HIC for approval as an amendment when they are ready and prior to use.
   For Specific Aims 4 and 5: Study materials for providers will not be translated into Spanish and interviews will be conducted in English.

As a limited alternative to the above requirement, will you use the short form* for consenting process if you unexpectedly encounter a non-English speaking individual interested in study participation and the translation of the long form is not possible prior to intended enrollment?
YES ☐ NO ☒

Note* If more than 2 study participants are enrolled using a short form translated into the same language, then the full consent form should be translated into that language for use the next time a subject speaking that language is to be enrolled.

Several translated short form templates are available on the HRPP website (yale.edu/hrpp) and translated HIPAA Research Authorization Forms are available on the HIPAA website (hipaa.yale.edu). If the translation of the short form is not available on our website, then the translated short form needs to be

submitted to the IRB office for approval via modification prior to enrolling the subject. ***Please review the guidance and presentation on use of the short form available on the HRPP website.***

If using a short form without a translated HIPAA Research Authorization Form, please request a HIPAA waiver in the section above.

9. Consent Waiver: In certain circumstances, the HIC may grant a waiver of signed consent, or a full waiver of consent, depending on the study. If you will request either a waiver of consent, or a waiver of signed consent for this study, complete the appropriate section below.

☐ **Not Requesting any consent waivers**

☒ **Requesting a waiver of <u>signed</u> consent: (Specific Aim 4: Observational Workflow Analysis and Specific Aim 4 and 5: Provider/Staff Qualitative Interviews)**

☐ **Recruitment/Screening only**

☒ **Entire Study (**Note that an information sheet may be required.)

For a waiver of signed consent, address the following:

- Would the signed consent form be the only record linking the subject and the research? **YES** ☐ **NO** ☐
- Does a breach of confidentiality constitute the principal risk to subjects? **YES** ☐ **NO** ☐

OR

- Does the research pose greater than minimal risk? **YES** ☐ **NO**☒
- Does the research include any activities that would require signed consent in a non-research context? **YES** ☐ **NO** ☒

☒ **Requesting a waiver of consent:**

☐ **<u>Recruitment/Screening</u> only**

☒ **Entire Study** (ONLY SPECIFIC AIM 3 – medical chart review)

For a waiver of consent, please address the following:

- Does the research pose greater than minimal risk to subjects?
  ☐ Yes ***If you answered yes, stop. A waiver cannot be granted.***
  ☒ No
- Will the waiver adversely affect subjects' rights and welfare? **YES** ☐ **NO**☒
- Why would the research be impracticable to conduct without the waiver?
  It will not be possible to retrospectively reach and obtain authorization for medical chart review of all postpartum women from the Women's Center and CWHM who delivered in the year prior to or in the first year of implementation of the quality improvement program.
- Where appropriate, how will pertinent information be returned to, or shared with subjects at a later date? N/A

SECTION IV: PROTECTION OF RESEARCH SUBJECTS

Confidentiality & Security of Data:

a. What protected health information (medical information along with the HIPAA identifiers) about subjects will be collected and used for the research?

MRN, Name, DOB, Race, Ethnicity, Marital status, Religion, Primary Language, Education, Zip Code and pertinent clinical history as described in Question 3 (Research Plan).

b. How will the research data be collected, recorded and stored?

Data will be collected by interview and medical record review. It will be recorded and stored on computers and digital audio files. Paper copies of transcripts will be produced. Electronic information will be stored on password protected computers in locked offices. Paper copies will be stored in locked file cabinets in locked offices. Electronic sharing of files will be conducted using Yale's Secure Box system.

c. How will the digital data be stored? ☐ CD ☐ DVD ☐ Flash Drive ☐ Portable Hard Drive ☒ Secured Server ☒ Laptop Computer ☒ Desktop Computer ☐ Other

d. What methods and procedures will be used to safeguard the confidentiality and security of the identifiable study data and the storage media indicated above during and after the subject's participation in the study?

Electronic information will be stored on password protected computers in locked offices. Paper copies will be stored in locked file cabinets in locked offices. Electronic sharing of files will be conducted using Yale's Secure Box system. Once digital audio files are downloaded as electronic files onto Yale's Secure Box system, they will be deleted from the recording device.

All portable devices must contain encryption software, per University Policy 5100. If there is a technical reason a device cannot be encrypted please submit an exception request to the Information Security, Policy and Compliance Office by clicking on url http://its.yale.edu/egrc or email it.compliance@yale.edu

e. What will be done with the data when the research is completed? Are there plans to destroy the identifiable data? If yes, describe how, by whom and when identifiers will be destroyed. If no, describe how the data and/or identifiers will be secured.

Data will be kept in secured formats as described above for at least five years after study is completed.

f. Who will have access to the protected health information (such as the research sponsor, the investigator, the research staff, all research monitors, FDA, Yale Cancer Center Data and Safety Monitoring Committee (DSMC), SSC, etc.)? (please distinguish between PHI and de-identified data)

The research sponsor, the principal and co- investigators, and the research staff.

g. If appropriate, has a Certificate of Confidentiality been obtained? No

h. Are any of the study procedures likely to yield information subject to mandatory reporting requirements? (e.g. HIV testing – reporting of communicable diseases; parent interview -incidents of child abuse, elderly abuse, etc.). Please verify to whom such instances will need to be reported. No

SECTION V: POTENTIAL BENEFITS

Potential Benefits: Identify any benefits that may be reasonably expected to result from the research, either to the subject(s) or to society at large. (Payment of subjects is not considered a benefit in this context of the risk benefit assessment.)

Possible benefits of this study include the potential to identify facilitators and barriers to the implementation process of introducing the new Inpatient Postpartum HPV Immunization Quality Improvement Initiative and document its effectiveness which would assist in expanding the program. This may, in turn, allow us to share our relatively simple and scaleable strategies with similar hospitals outside of Yale, thus broadening our impact and increasing HPV vaccination rates on a larger scale.

SECTION VI: RESEARCH ALTERNATIVES AND ECONOMIC CONSIDERATIONS

1. **Alternatives:** What other alternatives are available to the study subjects outside of the research?

   Individuals may choose not to participate in the qualitative interviews. This will not impact the care they receive at YNHH (patient interviews) or their employment (provider interviews).

2. **Payments for Participation (Economic Considerations):** Describe any payments that will be made to subjects, the amount and schedule of payments, and the conditions for receiving this compensation.

Individuals will receive $25 at the end of the interview for their time.

3. **Costs for Participation (Economic Considerations):** Clearly describe the subject's costs associated with participation in the research, and the interventions or procedures of the study that will be provided at no cost to subjects.

   There will be no costs for participants associated with this study.

4. **In Case of Injury:** This section is required for any research involving more than minimal risk, and for minimal risk research that presents the potential for physical harm (e.g., research involving blood draws). **N/A**

   b. Will medical treatment be available if research-related injury occurs?

   c. Where and from whom may treatment be obtained?

   d. Are there any limits to the treatment being provided?

   e. Who will pay for this treatment?

   f. How will the medical treatment be accessed by subjects?