

## **Improving Pneumococcal Vaccination Rates in Older Adults Through Enhanced Academic Detailing: Medicine, Nursing and Pharmacy Partnerships**

**Grant ID:** 20076509

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### **Abstract**

Vaccines are a low-cost high-impact intervention that effectively and efficiently reduce the burden of infectious diseases. Yet many populations, especially in rural areas, have vaccination rates well under nationally recommended levels. Integrating adult vaccination screening, education, administration, and billing into older adults' visits is proving to be challenging because of competing priorities. This quality improvement project will develop a replicable model of enhanced academic detailing to increase vaccine utilization. Academic detailing is an evidence-based approach to change clinical practice, where tailored material is shared colleague-to-colleague to improve decision-making. Enhanced academic detailing is conceptualized as a comprehensive approach that includes identification of healthcare provider and system barriers, builds an infrastructure for adult vaccinations, and is delivered by an interdisciplinary team. Our project will be phased over 30-months and starts with training a team of pharmacy, nursing, and medical researchers and students in the academic detailing approach. Then, interested community-based medical clinics and rural pharmacies in Whitman County, Washington will be recruited to pilot this approach. Our goal is to facilitate sustainable practice change in order to increase pneumococcal vaccination rates among older adults in rural Eastern Washington. We intend to demonstrate that a model for enhanced academic detailing can be developed that will consistently increase pneumococcal vaccination rates in rural-dwelling older adults in comparison to usual care. We plan to achieve our goal by pursuing three objectives: assess vaccination barriers, develop an enhanced academic-detailing model, and change healthcare providers' vaccination practices. We anticipate expected outcomes of decreased vaccination barriers and increased vaccination rates.

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## Reviewer Comments Addressed

### Reviewer Comment:

Please elaborate on the academic detailing program that will be attended in Boston. Will the academic detailing training occur close enough to the implementation where those who were trained are able to recall the training?

**Response:** The National Center for Academic Detailing (NaRCAD) is a collaboration between Brigham and Women's Hospital and Harvard Medical School. Academic detailing focuses on providing evidence-based education to healthcare providers to improve clinical decision making with the goal of better outcomes for patients.<sup>1</sup> The two-day training in Boston uses interactive lectures and role-playing breakout sessions to teach academic detailing principles and social marketing techniques. Over the two days, academic detailing is deconstructed into focused sections such as preparing introductions and strategies for a visit, communicating features and benefits of an intervention, identifying and managing barriers, building lasting relationships, and gaining commitment to behavior change.

After reading the reviewer comments, we considered attending the NaRCAD training offered in May 2016 instead of in September 2015. That plan, however, would shorten the time between the training and making our first academic detailing call. That timeframe would not allow adequate time for training the student team, creating the Pre-Academic Detailing Survey, and developing detailing materials. Now, in addition to those first-year activities, we plan to build in practice sessions to maintain and develop the skills we learned during our training.

### Reviewer Comment:

One panel member noted that with Enhanced Academic Detailing being more expensive due to training and travel is it ultimately worth the expense in terms of sustainability and the increased number of people being vaccinated. The panel member thought it may strengthen the project if the providers in one of the matched controls were offered an on-line training curriculum and the other control left to fend for itself.

**Response:** Academic detailing offers an evidence-based approach for discussing vaccination practices and assessing context-specific barriers to vaccination. We intend to have a honed skill set when we make academic detailing calls to discuss pneumococcal vaccination in older adults. This skill set is best achieved through training by leaders in the field. While our team members are academics, we believe this focused training will enhance our ability to hold evidence-based discussions with clinicians in their practice settings. Our goal with this quality improvement project is to create system-wide change in the vaccination practices of providers in Whitman County, Washington. Almost 10% of the 46,758 people living in Whitman County are over 65 years old and meet the recommendation for pneumococcal vaccination.<sup>2</sup> The out-patient cost to care for one person for a pneumonia infection is \$300.<sup>3</sup> Knowing that a majority of this population is unvaccinated or undervaccinated, the cost of \$8950 to train the four researcher team in order to increase the pneumococcal vaccination rate and prevent pneumococcal infection seems a worthwhile investment.

We changed the design of our project to affect as many positive patient-outcomes as possible. Removing control groups and instead providing detailing to all interested medical providers and pharmacists creates the quality improvement opportunity to address each of their specific barriers to vaccination and create system-wide change in Whitman County.

## Goal & Objectives

Academic detailing is educational outreach by healthcare providers (HCPs) for HCPs to promote best practice. It offers a means for addressing suboptimal adult vaccination rates, because a foundational component of academic detailing is understanding baseline knowledge and barriers to behavior change, and a key barrier to adult vaccination is HCPs' inability to prioritize current recommendations for vaccinating adults.<sup>4</sup> While education is being provided through national and professional initiatives, it is not shown to be sufficient for overcoming vaccination barriers. This insufficiency is due to another key barrier to achieving optimal adult vaccination rates which is lack of infrastructure for vaccinating adults systematically.<sup>4</sup>

The project proposed here is a quality improvement (QI) project to develop a replicable model of enhanced academic detailing. The academic detailing model, which dates back to the 1980s, is an evidence-based approach to change clinical practice, where tailored evidence is shared colleague-to-colleague to improve practice outcomes. The components of a successful model are a focused problem, a well-defined target audience, an interactive learning environment, repetition and reinforcement, and the use of brief graphical material.<sup>5</sup> A 2007 Cochrane systematic review of academic detailing found that multifaceted detailing was associated with a larger effect size (8.8% absolute difference in behavior).<sup>6</sup>

Enhanced academic detailing is conceptualized as a comprehensive intervention delivered by a multi-disciplinary team. Our approach will include not only tailored education about the recommended adult immunization schedule, but it also will address mechanisms for overcoming vaccination barriers and empower colleagues to take on more vaccination roles. Enhanced detailing is conceived as quality improvement rather than as an education process, because quality improvement targets system-wide weaknesses to produce sustainable improvement.

The aim of enhanced academic detailing is to affect sustainable practice change, such as infrastructure for adult vaccinations. Unlike other strategies of healthcare delivery, where those for adult healthcare informed those for children's healthcare, vaccination programs for children preceded those for adults. Vaccination programs for children are largely successful because refinement of the programs target factors related to missed opportunities. Enhanced academic detailing is a good fit for targeting missed opportunities that frequently occur with adult vaccination because we hypothesize these missed opportunities are more context-specific than those with children.

### Project Goal

Our overall goal is to increase pneumococcal vaccination rates among rural-dwelling older adults in Eastern Washington through the development and piloting of a reproducible academic detailing model for HCPs in community clinics and rural pharmacies. Our goal aligns with the intent of this funding opportunity by focusing on system-based changes and targeting vaccination disparities that exist in rural Eastern Washington.

## Objectives

Our overall goal will be attained by pursuing the following objectives:

1. Assess barriers to vaccinating adults in community clinics and rural pharmacies in Whitman County, Washington  
The *working hypothesis* is that barriers to vaccinating adults against pneumococcal disease are context-specific.
2. Develop an enhanced academic-detailing model with the potential to address pneumococcal vaccination in adults across the continuum of needs  
The *working hypothesis* is that the information HCPs need to target vaccination barriers is better presented in a tailored conversation with an interdisciplinary team.
3. Change healthcare providers' vaccination practices by targeting incremental change  
The *working hypothesis* is that pneumococcal vaccination rates in adults will increase when context-specific vaccination barriers are targeted with sustainable practice change.

## Expected Outcomes

We anticipate these objectives will yield expected outcomes to promote best practices of vaccination for older adults in Eastern Washington. Accomplishing Objective 1 will yield an understanding of barriers to vaccinating adults that are specific to Whitman County, WA yet are applicable to rural areas across the Inland Northwest. Achieving Objective 2 will yield a flexible model for implementing enhanced academic detailing to update HCP knowledge and build an infrastructure for adult vaccinations that is reproducible, multifaceted, and interdisciplinary. Accomplishing Objectives 1 and 2 is expected to yield sustainable practice changes, which accomplishes Objective 3, and will increase pneumococcal vaccination rates in older adults residing in Whitman County. Collectively, these expected outcomes will establish our model – enhanced academic detailing – as an approach that affects sustainable practice change.

## Needs Assessment

This QI project is designed to identify healthcare provider and system-based barriers and implement a best-practice, interdisciplinary, collaborative program to improve pneumococcal vaccination rates in patients ages 65 years and older living in rural Whitman County.

### **Pneumococcal Vaccination**

**National:** Immunizations, such as pneumococcal vaccine, are a low-cost high-impact intervention, according to the Task Force on Community Preventative Services.<sup>7</sup> However, national data from the CDC reveals that 2012 adult pneumococcal vaccination rates are not meeting HealthyPeople 2020 goals with only 59.9% of adults ages 65 years and older receiving the vaccine, specifically the 23-valent pneumococcal polysaccharide vaccine (PPSV23).<sup>8</sup> Recently, the Advisory Committee on Immunization Practices (ACIP) recommended the use of 13-valent pneumococcal conjugate vaccine (PCV13) in adults ages 65 years and older.<sup>9</sup>

According to the National Foundation for Infectious Diseases (NFID) vaccine coverage rates, in general, high-risk, or older patients, are unavailable for PCV13.<sup>10</sup> National rates are expected to be very low based on PPSV23 uptake rates. The NFID recognizes four key barriers to vaccinating adults with chronic conditions, conditions often prevalent in our older patients, which include competing priorities during patient visits, lack of ownership to educate, challenges in determining vaccination status and complexity of recommendations.<sup>10</sup> While all are relevant for pneumococcal vaccination, the latter concern is particularly important due to the multitude of considerations (i.e. age, prior vaccination status, timing and boosters) for pneumococcal vaccination in patients ages 65 years and older, providers must become proficient at readily identifying where a patient is in the vaccination series.

**Whitman County:** In Washington State, data from a 2012 CDC phone survey using the Behavioral Risk Factor Surveillance System (BRFSS) reveals that 36.5% of adults in Spokane County and 28.12% of adults in Whitman County reported receiving a pneumococcal vaccination.<sup>11</sup> However, this county data is not broken down by age or high-risk groups. Data from previous regional assessments have revealed that vaccination rates, in general, are lower for those with income  $\leq$  185% of the federal poverty level (FPL).<sup>12</sup> The population of Whitman County is over 46,000 with more than a third of household incomes less than FPL.<sup>2, 13</sup> Of concern, one in nine adults in Whitman County have asthma, a risk factor for pneumococcal disease or its complications.<sup>13</sup>

Preliminary inquiries about adult vaccination rates within Whitman County reveal that the use of adult pneumococcal vaccination is very limited. For example, two rural pharmacies are not providing vaccinations of any kind and nearby medical clinics have administered very limited amounts of pneumococcal (PPSV23) vaccinations (personal communication, Whitman County Health District). However, these clinics are providing high dose influenza and shingles vaccinations, which indicates that expansion to include greater screening and administration of pneumococcal vaccination particularly for older adults is feasible.

According to data from the 2013 census, 9.8% of the population of Whitman County is comprised of people ages 65 years and older.<sup>2</sup> This proportion of the population is lower than the state average due to high number of college-aged residents living in Pullman where Washington State University (WSU) is located. When considering this information, increasing pneumococcal vaccination efforts through academic detailing will impact a significant portion of the population.<sup>2</sup>

Pneumococcal vaccination rates, especially with PCV13 vaccine, in older adults in Whitman Country are anticipated to be very low and need dramatic improvement.

### **Pneumococcal Vaccination Barriers**

A multidisciplinary, national pneumococcal vaccination task force found barriers to vaccination included vaccine education gaps of providers and failure to assume responsibility for patient vaccination.<sup>14</sup> Adding to the general vaccine knowledge gaps are the recent ACIP recommendations to vaccinate all patients 65 and older with PCV13 in combination with PPSV23.<sup>9</sup> This combination has resulted in a difficult vaccination series dependent on a patient's previous vaccination status.

A 2003 study identifying barriers and facilitators of pneumococcal vaccination in over 1,000 older adults in a variety of settings found that in those unvaccinated for pneumococcal vaccine, three-quarters believed their physician either did not think they should be vaccinated or they did not know their provider's position on the vaccine. One of the key predictors of vaccination success was if personnel in the provider's office recommended the pneumococcal vaccination.<sup>15</sup> Enhancing awareness of the new guidelines and recommendations for older patients and ensuring physicians and other patient-care providers endorse pneumococcal vaccination is a crucial first step.

The role of nurses in increasing pneumococcal vaccination to date has focused on screening and administration of the PPSV23 vaccine mainly within the acute or long-term care settings. The important role of the office nurse has also been validated; however, with the caveat that there needs to be supported change in not only procedures, but also staffing to increase vaccination rates.<sup>16</sup> Helping office-based nurses, who are key drivers of vaccinating, create system-wide change to their pneumococcal vaccination approach (i.e. screening, standing orders, education, vaccination, documentation and billing) could also enhance rates.

The role of pharmacists related to pneumococcal vaccinations has been predominantly documented within hospital-based screening programs and community pharmacy-based immunization programs. Between August 2011 and July 2012 Walgreens' pharmacists, of whom >26,000 are certified vaccinators, administered more than 6.2 million vaccinations at over 7,500 stores nationwide.<sup>17</sup> Forty-six percent of patients were ages 65 years and older and were more likely to visit the pharmacy during traditional "clinic hours" versus weekends, holidays and evenings.<sup>17</sup> Rural pharmacies operate on a similar schedule to traditional clinics. Expanded late-night and weekend hours are not required to increase the vaccination rates in a



community. Taital also reported by screening and offering to administer the pneumococcal vaccine to people ages 65 years and older already receiving the 2010 flu vaccine, pharmacists increased vaccination rates from a national benchmark, determined by pharmacy claims data, of 2.9% to 4.9%<sup>18</sup> Even within a “major vaccinating force” like Walgreens, there is still much room for improvement, especially in rural areas not served by a large chain pharmacy.

**Whitman County Barriers:** An assessment identifying barriers, either provider or systems, to pneumococcal vaccination has not been formally conducted in Whitman County. With estimated low pneumococcal vaccination rates and low use, specifically, of PCV13 vaccine within office-based practices, one would assume there are similar medical, nursing and pharmacy barriers as mention above. However, there are two previously unrecognized barriers which were brought to our attention during our preliminary needs assessment and communication with Whitman County community pharmacies. In two rural townships pharmacists are not offering adult vaccinations due to concerns by nearby medical providers about competition from pharmacists and unwillingness to jeopardize healthy business relationships (personal communications, Tick Klock Drugs and Tekoa Pharmacy). One community pharmacy was very interested in providing vaccinations yet only had one staff pharmacist trained in providing adult vaccinations. This was a surprising finding, given that pharmacists in Washington State are nationally renowned for being major advocates and administrators for adult vaccinations. As we implement this project we will be mindful of the working, collaborative spirit of medical and pharmacy providers; while facilitating the change where pharmacists are also providing vaccinations which is a key focus of enhanced academic detailing. Breaking down misconceptions surrounding business competition and addressing the greater vaccination need, training pharmacists through a national certification program to provide vaccinations, and facilitating Collaborative Drug Therapy Agreements (CDTA) between physicians and community pharmacists to screen and vaccinate patients will greatly improving vaccination rates within Whitman County.

Our project assumes there will be multiple barrier to increasing vaccination rates, which include those recognized across all aspects of health care nationally and those specific to rural communities such as sensitive business relationships between providers, in Whitman County. A flexible, tailored, and interdisciplinary approach to overcome these barriers will be necessary.

## Design and Methods

### Background

Our needs assessment identifies concerning issues. First, is the limited data available with which to assess pneumococcal vaccination rates in Whitman County. Secondly, from the data available it appears that rates in this area are lower than even the national average, which is still significantly lower than the HealthyPeople 2020 goal.<sup>19</sup> Through this project we will address both of these issues, the former by collecting immunization data over a 2-year period and the later by creating a sustainable, provider and system-based change. Enhanced academic detailing will provide tailored, site-specific education and resources to HCPs. We hope to improve not only the current immunization rates, but also create a more stream-line approach for adult immunizations in a rural area.

We believe that academic detailing is the ideal model for HCP education regarding immunizations. Academic detailing has been utilized for 30 years, especially in areas of diabetes and mental health.<sup>1, 6</sup> Impact assessment on changing adult immunization practices within rural settings is limited.<sup>6, 20, 21</sup> The effectiveness of evidence-based information sharing, plus assessment of barriers and assistance implementing policy change and collaborative practice agreements by a multi-disciplinary team has not been undertaken. The project hopes to expand the experience with and publish findings of this approach. Through our five detailing visits we will identify current knowledge gaps and perceived barriers to implementing a successful immunization protocol, provide individualized resources needed to initiate and establish change to the current practice system, and follow up with each site to support HCPs during this process. We will also collect immunization rates and survey data, and facilitate discussion regarding the challenges and successes that occur during this process.

Successfully increasing immunization rates in a rural community will require involvement of a health-care team rather than individual practitioners. By taking a multi-disciplinary educational approach aimed at physicians, nurses and pharmacists regarding the benefit and importance of pneumococcal vaccine, increasing their awareness of patients who qualify for vaccination, and providing billing and documentation templates, we will be able to significantly increase vaccination rates. This project will utilize the strengths of our partnerships within our health-sciences campus. Through CDTAs and the progressive pharmacy practice act within Washington State, the investigators' experience with ambulatory care, geriatrics, immunization practice delivery, vaccination barriers, and practice-change will help local pharmacists to collaborate with physicians and play an important role in increasing immunization rates. Pharmacists are frequently on the front-lines of patient care and should be not only recommending the pneumococcal vaccine but also administering it.

### Methodology

A pretest-posttest control group design will be used to test our central hypothesis. The intervention, enhanced academic detailing, will consist of five enhanced academic detailing visits (henceforth known as "detailing"). The effectiveness of our intervention will be evaluated by comparing pre and post levels of vaccination barriers and immunization rates. Pre-

intervention data will be collected prior to the first detailing and post-intervention data will be collected after the five detailing visits have been completed.

In Whitman County there are approximately 17 medical clinics and 11 community pharmacies, ranging in location from a more populated area like Pullman to more remote like Tekoa and St. John, and varying from busy, multi-provider practices and busy, chain pharmacies to lower volume, small clinics and independent stores. After the results of a preliminary survey of the Whitman County medical clinics and pharmacies was conducted the study goal is to enroll four medical clinics and four pharmacies.

The medical clinics will be provided with academic detailing tailored to fit their needs and intended to increase their administration of pneumococcal vaccinations. Whether they need additional education on the current guidelines, help adding immunizations in to their current workflow, or assistance identifying patients who are in need of the vaccine, the academic detailing will be designed to fit their needs.

We intend to match each of the medical clinics to a pharmacy in the same geographical area with the intent to design and implement a CDTA between the providers at the medical clinic and the pharmacists. The pharmacists at the chosen locations will receive both academic detailing and APhA immunization training so that they will have in-depth knowledge on diseases with available immunizations, immunization schedules and techniques, vaccine storage and administration, and billing and documentation. They will also receive assistance creating their CDTA which will give these pharmacists the authority to prescribe and administer vaccinations to all patient within the guidelines of their agreements. Medical providers will have the option of administering a vaccine at the clinic or sending the patient to the pharmacy to receive it with the knowledge that the pharmacists are trained and ready to provide that service.

## Evaluation Design

### Sources of Data

1. **Pre-Academic Detailing Survey:** This survey will be developed after the academic detailing training and before Detailing 1. We plan to take direction from the training session on how many items to include in our baseline survey and how to format the items. Our aim is to develop a survey that is thorough but not burdensome. Vaccination barriers that will be addressed in the survey items are knowledge about pneumococcal vaccines, knowledge about recommended adult immunization schedules, immunization screening practices, satisfaction with current practices, number of patients vaccinated annually, and perceived barriers to providing pneumococcal vaccinations (e.g., time, reimbursement).
2. **Formative Evaluation Discussion:** We anticipate that even with tailored academic detailing and the individualized necessary materials and resources provided to each site there will be challenges to creating sustainable practice changes. Between Detailing 3 and Detailing 4, a formative evaluation outline will be developed to guide a “How’s it going?” discussion. Then, Detailing 4 will focus on determining what additional barriers have arisen during the implementation process. The information gained will be helpful to evaluate the barriers to changing vaccination practices and the challenges that initiating these changes have presented. This information will be of substantial use because it will allow our enhanced academic detailing model to be refined into a prototype for future.
3. **Post-Academic Detailing Survey:** The items in the Pre-Academic Detailing survey will be reformatted to be administered as our Post Academic Detailing Survey during Detailing 5. The results from the pre and post surveys will be aggregated and then comparatively analyzed. This data will be used to determine the practice change created by academic detailing presentations and the benefit derived by the targeted audience. This information will further strengthen the academic detailing model.
4. **Collection of Immunization Data:** Pneumococcal vaccination rates for each site will be collected annually beginning with the rate for 2014-2015. Given that academic detailing will include both provider and system-based approaches, the pneumococcal vaccination rate in adults in Whitman County is expected to increase 10% from baseline.<sup>19</sup>
5. **Essay from Students Participating in Academic Detailing:** After the final immunization data is analyzed, medical, pharmacy and nursing students will write an essay expounding on their positive and negative experiences and describing the perceived impact that academic detailing will have on their future practices. These will not be formally analyzed, but rather will provide a final summary to the research team.

### Data Analysis

The Pre and Post Academic Detailing Surveys will be analyzed for changes in vaccination barriers. Pre and post pneumococcal vaccination rates will be analyzed as a whole for intervention sites and as subgroups (pharmacy and clinic). Data from the pre and post surveys

will be collected as categorical and continuous variables. Raw data will be entered into a master dataset on a secure server and stored on a central database at WSU. To guard against loss, all data will be backed up regularly and stored in locked files in the WSU College of Pharmacy. For the final report and dissemination, descriptive analyses will be conducted to summarize the vaccine barrier and survey data. Categorical data will be reported as frequencies, and continuous variables will be reported as means with standard deviations. To compare changes in the mean vaccination rate a student's paired t-test will be performed. An ANOVA will also be utilized to assess the interventions impacting the collected vaccination rates. All analyzes will be done using SPSS software. An alpha error rate of 0.05 will be the threshold for statistical significance, and inferential results will be presented as point estimates with 95% confidence intervals.

### **Dissemination**

Manuscripts will be submitted to some of the following journals: *Journal of the American Pharmacist Association*, *American Journal of Preventative Medicine*, *Public Health*, *Pharmaceutical Education*, and/or *BMC Medical Education*. Additionally, a final presentation of our methods and findings will be given as a podium presentation at the American Pharmacist Association annual conference in March 2018. All healthcare providers who practice preventative adult medicine, regardless of scope, can benefit from the information collected.

Although not in the budget, other opportunities exist to utilize this research to positively impact the practice of pharmacy education. During the course of the study the research design will be presented as a poster at the WSU academic showcase and the Northwest Convention of the Washington State Pharmacists Association. The enhanced academic detailing prototype will also be presented at the American Association of Colleges of Pharmacy in July 2018.

## Detailed Workplan

### Year 1: Training and Development

- Obtain Institutional Review Board approval through WSU.
- Confirm enrollment of medical clinic and pharmacy sites to participate in project.
- Research team (Drs. McKeirnan, Panther, Caines, Potyk) attend National Resource Center for Academic Detailing (NaRCAD) training in Boston September 28 - 29, 2015.
- Collect baseline (2014-2015) immunization data from participating clinics and pharmacies.
- Expand interdisciplinary HCP team by recruiting student interns: WSU pharmacy students (2), WSU nursing student (1), and University of Washington medical student (1).
- Educate student interns on enhanced academic detailing (NaRCAD) and immunization resources (i.e., recommendations, screening forms, documentation).
- Develop Pre-Academic Detailing Survey to be administered to HCPs prior to first academic detailing visit to assess general knowledge, current utilization of pneumococcal vaccines, and perceived barriers to providing pneumococcal vaccinations and suggestions to overcome them.
- Contract America Pharmacists Association (APhA) Immunization Trainer to complete onsite Trainer Certificate course to Drs. McKeirnan and Panther in Spokane. Training will enable them to provide APhA immunization training and certification to local pharmacists.
- **Detailing 1:** Conduct introductory visit at each site to build collaborative relationship and administer Pre-Academic Detailing Survey.
- Present 20-30 minute enhanced academic detailing conversation to facilitate discussion regarding recommended immunization schedule for pneumococcal vaccination in adults, missed opportunities, and administration.
- Create pharmacy educational material regarding billing and pharmacy CDTAs, assist pharmacies as necessary.
- Provide APhA Immunization certificate course to participating pharmacists.
- Update detailing material per ACIP recommendations and other published.

### Year 2: Academic Detailing and Implementation of Change

- Collect 2015-2016 immunization data from participating clinics and pharmacies.
- Detailing 2: Conduct enhanced academic detailing to facilitate a conversation regarding perceived barriers to administering vaccinations. Determine ideas for future assistance in addressing specific needs to improve vaccination rates.
- Utilize information from visits and survey data to tailor educational materials to each site with the aim of decreasing vaccination barriers and increasing immunization rates.
- Detailing 3: Provide tailored educational materials and assist with implementation.
- Design formative evaluation to assess barriers to the implementation of suggested changes from detailing.

- Detailing 4: Conduct formative evaluation. Facilitate discussion regarding effect of academic detailing on removing vaccination barriers and increasing immunization rates.
- Prepare methodology dissemination proposal for Northwest Convention of the Washington State Pharmacists Association (WSPA) May 2016.
- Present preliminary findings at Northwest Convention of the WSPA.

**Year 3: Final Data Collection and Analysis**

- Detailing 5: Conduct Post-Academic Detailing Survey to assess sustainability and change.
- Collect 2016-2017 immunization data from participating clinics and pharmacies.
- Evaluate students' experience, including impact on future success in chosen profession.
- Aggregate (clinics, pharmacies) and analyze immunization and survey data.
- Create and submit final report.
- Prepare dissemination proposals and present findings at annual conference of the American Pharmacists Association March 2017.

## Deliverables Schedule

YEAR 1 (2015-2016) ACTIVITIES	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY
Obtain WSU and Spokane IRB approval												
Confirm clinic and pharmacy sites*												
Researchers attend NaRCAD training in Boston*												
Collect baseline vaccination data*												
Recruit interdisciplinary student interns												
Train student interns on academic detailing												
Develop EAD survey												
APhA Immunization Training Certification												
<b>Detailing 1: Pre-EAD survey*</b>												
Develop HCP EAD material												
Update detailing info (i.e. ACIP, NaRCAD)												
Provide immunization training to pharmacists												

YEAR 2 (2016-2017) ACTIVITIES	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY
<b>Detailing 2: Introductory EAD session*</b>												
Collect vaccination data												
Tailor and update HCP EAD material												
<b>Detailing 3: Tailored EAD session*</b>												
Tailor and update HCP EAD material												
<b>Detailing 4: Implementation issues session*</b>												
Prepare methods dissemination proposal												
Present preliminary findings at local meeting												
Design formative eval and post-EAD surveys												

YEAR 3 (2017) ACTIVITIES	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
<b>Detailing 5: Conduct post-EAD assessment and collect ending vaccination data*</b>					
Collect student experience essays					
Aggregate and analyze data					
Create and submit final report					
Prepare and present at national meeting					

\* travel required

ACIP: Advisory Committee on Immunization Practices

EAD: Enhanced Academic Detailing

HCP: Healthcare Provider

NaRCAD: National Resource Center for Academic Detailing

IRB: Institutional Review Board



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