

Fall 12-18-2015

# Increasing HPV Awareness and 3-Dose Series Compliance Among the Female Population (Ages 11-26) in a Community Health Clinic

Vanessa Orozco

University of San Francisco, [vanessa.orozco@live.com](mailto:vanessa.orozco@live.com)

Follow this and additional works at: <https://repository.usfca.edu/capstone>

 Part of the [Public Health and Community Nursing Commons](#)

---

## Recommended Citation

Orozco, Vanessa, "Increasing HPV Awareness and 3-Dose Series Compliance Among the Female Population (Ages 11-26) in a Community Health Clinic" (2015). *Master's Projects and Capstones*. 223.  
<https://repository.usfca.edu/capstone/223>

This Project/Capstone is brought to you for free and open access by the Theses, Dissertations, Capstones and Projects at USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. It has been accepted for inclusion in Master's Projects and Capstones by an authorized administrator of USF Scholarship: a digital repository @ Gleeson Library | Geschke Center. For more information, please contact [repository@usfca.edu](mailto:repository@usfca.edu).

# Increasing HPV Awareness and 3-Dose Series Compliance Among the Female Population (Ages 11-26) in a Community Health Clinic

---

Vanessa Orozco, RN, MSN

*University of San Francisco*

11/30/2015

Increasing HPV Awareness and 3-Dose Series Compliance  
Among the Female Population (Ages 11-26) in a Community Health Clinic

University of San Francisco

Vanessa Orozco

Author's Note

This paper was prepared for N651: CNL Role: Synthesis, taught by Dr. Karin Blais.

### **Clinical Leadership Theme**

In accordance with the American Association College of Nursing (AACN) End-of-Program Competencies (2013), this project encompasses the curriculum element of Nursing Leadership: Advocate. This relates to the project in terms of using evidence-based practice (EBP) to increase vaccination rates within a community clinic, thereby working to change practice and improving client healthcare outcomes both within the short-and long-term time frame. The overall Improvement Theme for this project is to utilize known factors associated with lack of human papillomavirus (HPV) vaccination compliance, and implement interventions to improve vaccination rates and compliance.

### **Statement of the Problem**

During an organizational-wide Quality Improvement meeting earlier this year it was noted that as a whole, completion of 3-dose HPV vaccinations were extremely low. At this particular clinic it was noted that for females, ages 11-26, only 7% had completed the 3-dose series. The remaining 93% encompasses all those individuals that have not received either the 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> dose. While any number of contributing factors can be attributed to these rates, several have been found to be more prominent at this clinic. By identifying known barriers in reduced compliance, and implementing interventions, the aim is to increase overall vaccination compliance rates, while also increasing education in areas of patient concerns that would otherwise serve as deterrents to them receiving the vaccine.

### **Project Overview**

The goal of this project is to have patients return for their 2<sup>nd</sup> or 3<sup>rd</sup> dose of the HPV Gardasil<sup>®</sup> 9 vaccine, thereby increasing compliance rates at the clinic. The intervention

implemented was a follow-up reminder phone call, to serve as a reminder for the patient to return for their 2<sup>nd</sup> or 3<sup>rd</sup> dose. This directly relates to the Global Aim Statement that is to improve the rate of HPV vaccination continuing compliance within the female population of the community clinic. The goal of this project is that in introducing the intervention, via a follow-up phone call, we will not only increase vaccination compliance rates but will also be able to provide education regarding the HPV vaccine. Recent figures show that our clinic serves ~2,375 female patients between the ages of 11-26, the age during which all 3 doses of the Gardasil<sup>®</sup> 9 should be administered. However of that count only 166 individuals completed the 3-dose vaccination, equal to only 7%. For the purposes of this project, the focus will be in contacting those individuals who have already received the 1<sup>st</sup> or 2<sup>nd</sup> dose. The aim is to enable individuals to return for their 2<sup>nd</sup> or 3<sup>rd</sup> dose, thereby increasing vaccination compliance or completion of the 3-dose series.

### **Rationale**

In analyzing the microsystem and current policies/protocols, several needs become apparent. Refer to Appendices: (A) for the Fish-Bone Diagram, (B) for the Process Map flowchart, (C) for the SWOT analysis, (D) Cost Analysis, (E) for the Stakeholder Analysis, and (F) for the PDSA ramps. These analyses were done to obtain a more detailed perspective into the microsystem and therefore the project analysis.

### *Root-Cause Analysis*

In performing the microsystem assessment, the use of the fish-bone diagram highlighted multiple areas of concern regarding patients, clinic staff, environment, equipment, methods, and materials. Current vaccination policy did not delineate scheduling the 2 month (2<sup>nd</sup> dose) and 6 month (3<sup>rd</sup> dose) vaccinations. Related to this factor, there were also no reminder cards/magnets

that patients could take home with them. Third, there was no standing order for vaccination follow-ups, such as a reminder via e-mail, text message, phone call, or letter if the patient had not returned for the next dose within an allotted time period. Related to this factor, there were also no electronic medical record (EMR) alerts in the computerized charting system. In reviewing available educational information at the clinic, there were also no pamphlets, educational flyers, or posters that highlight HPV awareness in patient care rooms.

As mentioned earlier, the goal of this project was to improve the rate of HPV vaccination compliance within the female population of the community clinic. Education and awareness was crucial in implementing this process, whether about the actual vaccine or financial assistance available. An example of this was that for those individuals under the age of 18, the State of California operates the Vaccines for Children (VFC) program, which provides vaccinations at no cost, and is a program that is offered at our clinic (CDC, VFC Program). Thereby the intervention of follow-up call is two-fold in that (a) we schedule 2nd or 3rd dose vaccinations and increase compliance rates, and (b) provide HPV vaccination education to eliminate possible deterrents.

### *Process Map*

The use of a flow chart was beneficial as it highlighted areas of missed opportunities by clinic staff. In total there were five missed opportunities found during a patient visit. The purpose of using a flowchart for office visits was to highlight the need for not only missed opportunities but also to show where interventions could take place. Missed opportunities were one of the most significant deterrents found in the President's Cancer Panel Annual Report of 2012-2013, the Centers for Disease Control and Prevention (CDC), the Advisory Committee on Immunization Practices (ACIP), and the National Vaccine Advisory Committee (NVAC). These

organizations all suggest that missed clinical opportunities are the most important reason or deterrent why HPV vaccination rates are so low in the United States. It is important to note that while vaccinations need to be checked by licensed providers; MAs may provide pamphlets or handouts, and RNs and MDs can discuss and provide education regarding any concerns of the vaccination. The important take-away from this flowchart is that at any point of the office visit, the HPV vaccination discussion can be initiated and any questions may then be addressed or directed to the correct personnel.

### *SWOT Analysis*

The use of a SWOT analysis was useful to better acquaint myself with the issues that our specific clinic faces, as well as those issues that could be addressed organization-wide. One of the most encouraging strengths found was that the low rates of HPV vaccination were a concern not only for our clinic, but other organization clinics. To this end the Director of Population Health was working to secure a grant to address this issue, which I will revisit in the Results section of this project. Other strengths included the use of public/private assistance programs to help pay for the cost of the vaccine. One of the other important strengths identified is that due to the amount of patients we see there is a MA strictly assigned to immunizations, thereby we can schedule patients in on a relatively short basis for immunization appointments.

Some of the weaknesses found during this analysis involved the identification of barriers such as low staff compliance and accountability, checks & balances (i.e. flags in EHR, weekly reports and meetings to educate staff on the need for patient education and f/u appointment scheduling), and actual time spent training staff on how to initiate the discussion. Other weaknesses included no current policy regarding the scheduling of 2<sup>nd</sup> or 3<sup>rd</sup> doses of any vaccine requiring more than one dose, and no policy regarding follow-up reminders.

Understanding weaknesses allows us to look for opportunities in our external realm. Some of the areas found were education and alerts. This affects all clinical staff whether front office, MAs, RNs, MDs, or NPs. As the organization uses EHRs, they were currently pursuing the capability to create alerts when the patient's chart was activated. An example of this would be that the patient calls to schedule a visit, and an alert signals the personnel that they are due for their 1<sup>st</sup>, 2<sup>nd</sup>, or 3<sup>rd</sup> dose of the HPV vaccine, at that time the person attending to the patient can inquire and schedule them for the vaccine. Another opportunity was to actually create a policy regarding scheduling of subsequent visits and the use follow-up reminders via phone call or letter. The use of text messaging had been previously used for other projects, but patients did not like these reminders and would usually opt out of this feature.

As with any project there are threats to the immediate, continued, and future success of the project. One of the two main threats is staff compliance, whether it is in regards to missed opportunities, education, or inquiring of the vaccine. The other main threat is that of the patients, in that despite all effort they still do not come in for subsequent doses, thereby decreasing compliance and increasing risk for HPV-associated infections and cancers in the future. One of the most important ways to mitigate these threats is education for both patients and clinic staff. In particular if the staff is made aware of current statistics, ways to improve compliance rates, educated on importance of HPV vaccinations, and how to implement these interventions, they will be more likely to comply themselves. As a CNL it is important to gather data, analyze and make sense of it, and apply evidence-based practice (EBP) for improving facility protocols and patient outcomes.



*Cost-Analysis and Stakeholder Analysis*

Currently the manufacturer (Merck) of Gardasil ® 9 charges \$263 per dose (or what the clinic terms private stock). VFC does not charge for the vaccines they send the clinic, and the patients that are 11-18 years of age receive the vaccine at no cost. If the patient is 19-20 years of age, Medicaid covers the cost via the Early and Periodic Screening, Diagnostic, and Treatment benefit (President's Cancer Panel Annual Report, Goal 3, Objective 3.3). If the individual falls between the ages of 21-26 and demonstrates financial need, they may obtain the vaccine free of charge through the Merck Vaccine Patient Assistance Program (MVPAP). However the application form needs to be filled out for each dose and the clinic has seen a reduced effort from patients in regards to this form, therefore reduced compliance. If the individual in question does not fall within these categories the clinic offers the vaccine at \$175 per dose, plus a sliding scale administration fee based on income and/or insurance.

Understanding the safety, efficacy, and importance of the HPV vaccination is crucial to identifying stakeholders within this project and its continued and future success. In addition it is also important to be aware of the complications that may arise from not receiving the vaccination, as this information can help in influencing the reception and acceptance of the vaccination, leading to increased compliance. For this project, the most important stakeholder is the patient as they will be the ones directly affected. Also equally important are parents/caregivers, especially for those individuals that are 11-18 years of age and are ultimately the deciding factor at this age. Providers are also crucially important in introducing this discussion during annual visits or otherwise. MAs are important because they are often the link between patients and healthcare providers. RNs are important as they will be doing the bulk of education and follow-up needed to ensure compliance. If these stakeholders can align together

for the good of the patient, we will see increased compliance at the clinic, and optimistically a decreased risk of HPV-associated infections and cancers in the future.

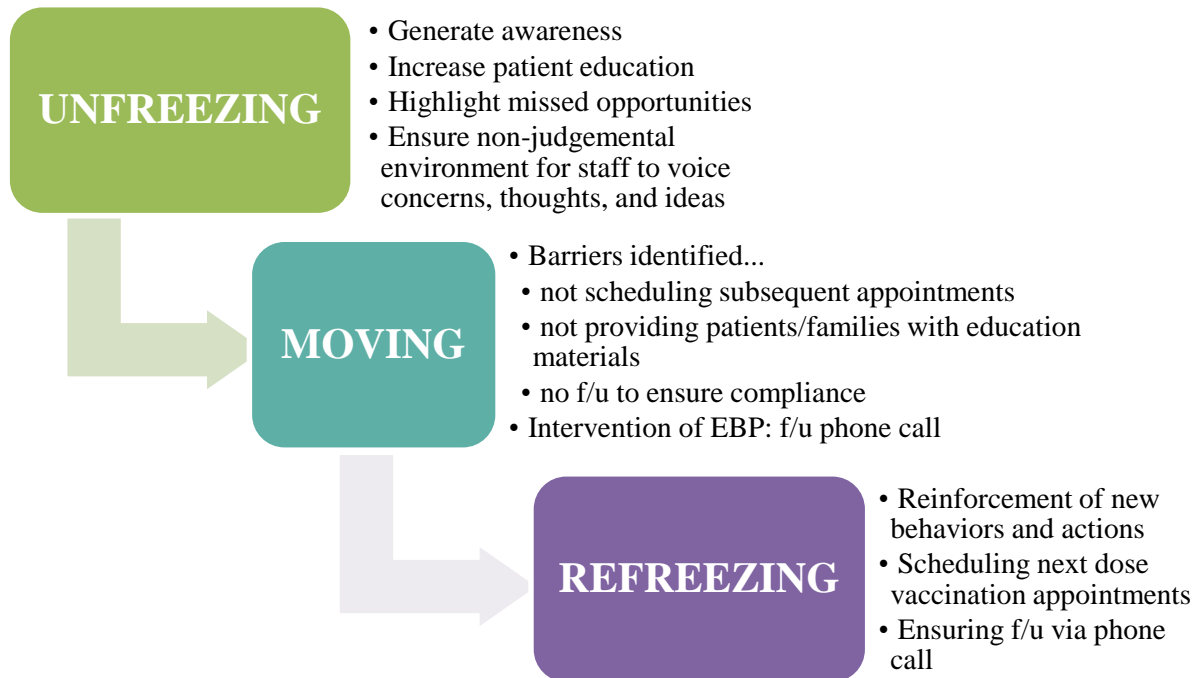
### **Methodology**

As mentioned earlier, during the organizational Quality Improvement, it was found that the clinic serves ~2, 375 females, ages 11-26. Of this amount it was found that roughly 7% or ~166 patients had received all 3 doses of the Gardasil<sup>®</sup> 9 vaccination for HPV prevention. In the President's Cancer Panel Annual Report (2013) the need to increase HPV vaccination rates was the primary goal in preventing various types of future cancers and other HPV-related infections/diseases (Executive Summary, para. 1). Furthermore a Healthy People 2020 goal (2013) is to have 80% of adolescent females, ages 13-15, to have received the full 3-dose series (About the Data, Target).

The objective of this project was to increase compliance by implementation of follow-up phone calls for those individuals who still needed their 2nd and/or 3rd doses. The phone call would allow for follow-up questions, provision of education, scheduling appointment for next dose, and anticipating or eliminating any future deterrents for not complying with the vaccinations. In addition the clinic now offers Gardasil<sup>®</sup> 9 future appointment cards where MAs can schedule the dates of the subsequent doses, when individuals receive their 1<sup>st</sup> dose. As a result MA education is also an important facet of implementation to ensure compliance not only for the duration of the project but in the continued success of these interventions. The use of Lewin's Change Theory has been especially beneficial in not only creating awareness but in providing education as to the why. This theory encompasses the use of 3 components: unfreezing, change, and refreezing (Nursing Theory, Lewin's Change Theory, para. 4). Bowers (2011) likens this theory to the "processes of planning, implementing and evaluating care" and

that “if behavioral resistance is not identified and worked with, they can reverse even the best-intended change projects” (p. 20, 21). Thereby using the theory has allowed for staff buy-in to help ensure interventions are successful now and in the future.

### Lewin’s Change Theory



Education is difficult to measure; therefore the data used to measure effectiveness of interventions is data pertaining to whether or not individuals came in for subsequent doses after intervention of the follow-up phone call. The desired outcome is to see a 10% increase overall within the 2<sup>nd</sup> and 3<sup>rd</sup> doses. To ascertain whether the said interventions have been successful, we will measure the 2<sup>nd</sup> and 3<sup>rd</sup> dose rates, over an 8-week period. These goals are such because as patient records are examined, it is unsure how many individuals will fall within the 8-week time constraint for the project.

### **Data Source/Literature Review**

The site for this project is a private, non-profit 501(c)(3) community health organization clinic, providing medical, dental and behavioral health care to residents of Riverside County, located in Southern California. This clinic serves a very racially diverse community, from newborns to geriatrics, and at this particular site a Women's Health, Behavioral Health, and Pediatrics team. The clinic staff includes MDs, NPs, PAs, RNs, MAs, lab technicians, phlebotomists, and an abundance of ancillary office staff. As a community clinic the main focus of care is preventative, and how we can keep the community healthy by providing care to those not insured, or whose insurance will not cover services at other healthcare locations. At the community health level, vaccinations are a fundamental part of preventative healthcare and subsequent population/community health. As we serve a large adolescent/young adult population, the need for immunizations is a large component of their healthcare.

The process of finding relevant literature took some time as there is a plethora of information regarding the importance of HPV vaccination and continued compliance to reduce HPV-related infections and cancers. To be more effective and selective in literature research the use of PICO served to narrow the focus and to garner specific information. The following were the PICO search terms:

**P:** HPV vaccination compliance in the female population using EBP follow-up

**I:** EBP follow-up methods: phone call, Gardasil® cards

**C:** no follow-up and effects on compliance

**O:** follow-up leads to increased compliance

Overall I was able to find a good amount of content to support my project, being that this is a current national priority. The importance of introductory and continued HPV vaccination

compliance is a priority mentioned in both the President's Cancer Panel Annual Report (2013) and the Healthy People 2020 goals.

The HPV vaccination and importance of compliance in receiving all 3 doses has been researched time and time again. Much of the literature is geared towards ways to increase compliance, importance of receiving vaccine prior to sexual activity, studies showing that without vaccinations there are increases in HPV-infections and cancers. Highlighting the importance of HPV vaccination is the President's Cancer Panel Annual Report (2013) in that just two viruses, HPV16 and HPV18 are responsible for more than "22,000 cancers in the United States... Yet, in the U.S., only one-third of adolescent girls" are receiving the vaccine (The Case for HPV Vaccination, para. 2). Furthermore the researchers behind this report state that there are ways increase introductory HPV vaccinations and compliance by (1) reducing missed clinical opportunities to recommend and administer vaccines, (2) increase parents', caregivers', and adolescents' acceptance of HPV vaccines, and (3) maximize access to HPV vaccination services (President's Cancer Panel Annual Report, How to Accelerate HPV Vaccine Uptake in the U.S.). This literature was particularly useful in looking for missed opportunities when the Process Mapping Flow-Chart was being done, and to that extent there were five missed opportunities found.

Another piece of literature that provided information necessary to understand deterrents that were a part of the parent or caregiver decision to not vaccinate came from the Centers for Disease Control and Prevention (CDC) (2013) Morbidity and Mortality Weekly Report (MMWR) on the HPV coverage among adolescent girls. This report found that there were five leading factors regarding vaccination declination: (1) it was not needed, (2) it was not recommended, (3) there were vaccination safety concerns, (4) there was a lack of knowledge

about the vaccine and/or disease, and (5) the individual was not sexually active. In addition the report also echoed the findings of the President's Cancer Panel Annual Report, in that in just the span of six years missed opportunities increased by 63.2%, and if these missed opportunities had been eliminated there would have been a compliance rate of 92.6% (Vaccination Coverage, para. 3). This highlights the importance of not only providing education but increasing awareness of not only the vaccination but possible future implications if not received.

Focusing on missed opportunities the National Vaccine Advisory Committee (NVAC) (2013) outlined a Summary of Standards to address shortcoming from missed opportunities including the following:

“(1) ensure professional competencies in immunizations, (2) assess immunization status in every patient care and counseling encounter and strongly recommend needed vaccine(s), (3) ensure that receipt of vaccination is documented in patient medical record and immunization registry, (4) incorporate immunization needs assessment into every clinical encounter, (5) stay up-to-date on, and educate patients about, vaccine recommendations, and (6) implement systems to incorporate vaccine assessment into routine clinical care...” (p. 3, 4)

In particular the use of implementing systems is something that the organizational IT department is currently working on for other programs, but it would be something useful for maintaining vaccinations up-to-date and reminder systems.

Focusing on deterrents to receiving vaccinations, Saraiya, Steben, Watson, and Markowitz (2013) found that the highest precursors to denial of vaccination were the factors of finances, vaccination acceptability, how or where the patient would receive the vaccination, and whether or not the provider recommended the vaccination. This had to do with the provider-

patient relationship, which also highlights the need for not missing those opportunities to have the HPV vaccination discussion. The researchers also stated that although the HPV vaccinations are costly now (HPV is one of the most expensive vaccines out at this moment), the benefit is that it may ultimately reduce cancers, which in turn may reduce morbidity and treatment costs associated with HPV-related infections and/or cancers.

In relation to reducing cancers, an article by Cox, Cox, Sturm, and Zimet (2010) stated that HPV vaccinations were of such importance within the minority/disadvantaged community, because it will often be these populations that will not have access to routine Pap screenings for cancer. This was an astounding correlation and all the more relevant for the clinic as we serve a largely Hispanic but increasingly immigrant community from the Middle East, Central and South America, and Africa. This research brought forth an important issue that until I had read the research, had not previously thought about and its implications for the community clinic setting.

All of the above literature is important to understand before implementing EBP interventions. The choice of follow-up phone call reminder was based upon literature showcasing that EBP reminder/recall for immunizations was very effective in increasing compliance (Suh, Saville, Daley, Glazner, Barrow, Stokley, Dong, Beaty, Dickinson, & Kempe, 2013). In this particular study, researchers used both letters and phone calls as reminder and focused only on those individuals who had already received the 1<sup>st</sup> dose of HPV. At the end of their study it was found that there was an 11.2% increase in compliance. This research showed that the use of EBP practice, follow-up reminder phone call, was successful and effective in increasing HPV compliance rates.

### **Timeline**

This project began towards the end of August 2015 and was completed late-November 2015. The biggest delay was in obtaining the list of patients that had already received the 1<sup>st</sup> or 2<sup>nd</sup> dose, because it was the foundation upon which the project would proceed. Another delay was in receiving a response from the organization Finance Department regarding the finances of the vaccine also took a little more time than expected. Refer to Appendix G for the Timeline of this project.

### **Expected Results**

The proposed goal of a combined 10% increase in both 2<sup>nd</sup> and 3<sup>rd</sup> doses amounts to ~23 individuals. The list of patients showed that there are ~ 172 females who had received the 1<sup>st</sup> dose, and 81 females who had received the 2<sup>nd</sup> dose. The aim of a 10% increase was to be able to present at a Quality Improvement meeting, the usefulness of a Clinical Nurse Leader, and what we can achieve. More specifically I wanted to present to the organization that the use of EBP is not only something used in hospitals, but is something that can be used in any microsystem. Being able to show how a simple EBP method of a follow-up reminder phone call (although it does take time), and providing patient education during that time, can increase patient compliance which then directly improves clinic and possibly organization-wide statistics.

As the project progressed, it was important to remain flexible in what to expect, what changes to make, and trying to foresee any issues that could have arisen, thereby avoiding delays. To that extent, the use of various types of analysis, including the SWOT and Fish-Bone Diagram, have been especially useful in delineating areas of concern, and what could cause those delays. Although one of the possible “delays” identified had to do with staff compliance, as one does not know how they will react to change, I have been pleasantly surprised. Although there is



high MA turnover, the staff that has longevity has shown such pride in what they do, how they do it, the care they provide to their patients, and really take ownership of their actions. I have also found that staff acceptance and buy-in is more effective not only if they have a say, but if they are provided with the education behind the changes. For me personally, hearing that “Oh, now I understand or I see...” and seeing that “light-bulb” moment of recognition and understanding has been such a motivating experience to push forward. It also highlights the importance and significance of what a CNL can do within any setting.

### **Evaluation**

The project resulted in a 26.7% increase in 2<sup>nd</sup> dose compliance, and 31.6% increase in 3<sup>rd</sup> dose compliance. Overall there was a combined increase of 27.9%, surpassing the original goal of 10%. While the work was very tedious, having these results clearly shows that EBP follow-up phone call reminders are successful in increasing HPV compliance rates.

Midway through this project we were informed that our clinic had received a sizable grant from the Centers of Disease Control and Prevention (CDC) in conjunction with the American Cancer Society (ACS). This was a major grant as our clinic was 1 in 10 chosen nationwide to receive this grant, for the sole purpose of increasing HPV vaccination compliance rates. As such I was able to present with the ACS representative and the Director of Population Health, how the grant would affect our services, and what was hoped to be achieved by use of this grant. As of now we have been able to place alerts on the EHR system, and order pamphlets and educational materials. The goal for the clinic in regards to this grant is to see an overall increase of 15% by the middle of 2016.

### **Nursing Relevance**

The most significant contribution of increasing HPV vaccination compliance is something whose full impact and implications will not be recognized until later. The mentality of intervening upstream rather than downstream is exactly what this project entails. Throughout the literature research, time spent with the project, educating staff and patients, the ultimate goal is to prevent future cases of HPV-associated infections and cancers. The CDC (2012) estimates that there are approximately 79 million (male and female combined in the U.S) currently infected with 1 of 40 types of HPV. Furthermore they estimate that there are approximately 14 million new infections every year in the United States alone. These are astounding and even more so when we realize that a simple 3-dose vaccination can prevent the majority of these infections. While most of the 40 types of HPV are not cancerous, there are certain types that can cause cancers of the “cervix, anus, penis, vulva, vagina, and oropharynx (back of throat including base of tongue and tonsils)...genital warts and, rarely, respiratory tract warts in children” (CDC, HPV Background). In addition to that there are approximately “11,000 women diagnosed with cervical cancer and about 4,400 women die from this disease in the U.S. each year” (CDC, HPV Background). While all most likely could not have been prevented, the majority could have been most likely prevented by vaccination.

There is no present way to estimate how many infections or cancers can be prevented by the vaccination. However by providing education to both staff and patients, implementing EBP interventions, and getting this population to vaccinate, the future implications are too vast to not acknowledge and act now.

### **Summary Report**

The overall goal of this project was to increase HPV 2<sup>nd</sup> and 3<sup>rd</sup> dose compliance rates by a combined 10% among the female adolescent population (ages 11-26). This was to be achieved by implementing EBP follow-up calls to not only schedule appointments but also to serve as a reminder for patients to come into previously scheduled appointments. This project was chosen as prior clinic and organization-wide meetings had delineated compliance rates at just 7%, thereby highlighting the importance of attention needed to this area. As mentioned above the population targeted was female adolescents, ages 11-26. This population was via a community health clinic, where vaccinations are a primary component of preventative healthcare.

There were various methods employed to implement this project including an initial microsystem assessment, which entails a Root Cause Analysis (Fish-Bone Diagram), Process Mapping (Flow Chart), SWOT analysis, Cost-Analysis, Stakeholder Analysis, and PDSA ramps. In addition maintaining a schedule by use of timeline was also imperative in ensuring that the above microsystem assessment and actual implementation of project would occur in a timely manner. Mid-way through the project the clinic received a substantial CDC grant (in association with ACS), to specifically work on increasing HPV compliance rates overall, including the male and female population by the middle of next year. Although my personal project was focused on the female population, the grant was helpful in creating EHR alerts when the patient chart is accessed, providing educational materials for clinic staff and patients alike, and in creating a larger discussion and imperative for change.

As mentioned above the goal was for a combined increase of 10%. Using a compiled list of patients that was received from the Director of Population Health, showed the potential possibilities as there were 172 individuals who needed the 2<sup>nd</sup> dose, and 57 individuals who

needed the 3<sup>rd</sup> dose. Therefore there were a total of 229 individuals, and the proposed goal of 10% indicated a need to have at minimum 23 patients to receive their next dose. Overall the project surpassed its goal as we were able to have 46 2<sup>nd</sup> dose and 18 3<sup>rd</sup> dose individuals receive their next dose. With these results there was a combined increase in compliance of 27.9%, which exceeded the original 10% goal.

Sustainability of this project is largely dependent on the front-line office staff, which includes everyone from the operators to physicians, and the Patient Care Coordinators who focus on doing follow-up for a number of projects that are simultaneously on-going. There is a clear responsibility and role for each individual in initiating the HPV discussion, directing to the proper resources/personnel, and ensuring follow-up via a variety of ways. Throughout this practicum it was crucially important to not only the introductory, but continued and future success of the project to educate clinic staff. In educating, we empower and allow them to be proactive, take ownership and pride in how we can change patient outcomes as a team.

## References

Bowers, B. (2011). Managing change by empowering staff. *Nursing Times*, 107, 19-21.

Retrieved from

[http://www.nursingtimes.net/Journals/2011/08/12/i/x/x/160811\\_Innovation\\_Bowers.pdf](http://www.nursingtimes.net/Journals/2011/08/12/i/x/x/160811_Innovation_Bowers.pdf)

California Department of Public Health. (2015). *Human papillomavirus (HPV)*. Retrieved from

[http://www.cdph.ca.gov/HealthInfo/discond/Pages/HumanPapillomavirus\(HPV\).aspx](http://www.cdph.ca.gov/HealthInfo/discond/Pages/HumanPapillomavirus(HPV).aspx)

Centers for Disease Control and Prevention. (CDC). (2015). *Advisory committee on immunization practices (ACIP)*. Retrieved from

<http://www.cdc.gov/vaccines/acip/about.html>

Centers for Disease Control and Prevention. (CDC). (2013). *Human papillomavirus vaccination coverage among adolescent girls, 2007–2012, and postlicensure vaccine safety monitoring, 2006–2013 — United States*. Morbidity and Mortality Weekly Report. (MMWR). Retrieved from

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6229a4.htm>

Centers for Disease Control and Prevention. (CDC). (2015). *Vaccines and immunizations: HPV vaccination*. Retrieved from <http://www.cdc.gov/vaccines/vpd-vac/hpv/default.htm>

Centers for Disease Control and Prevention. (CDC). (2014). *Vaccines for children program (VFC)*. Retrieved from <http://www.cdc.gov/vaccines/programs/vfc/index.html>

Cox, D.S., Cox, A.D., Sturm, L., & Zimet G. (2010). Behavioral interventions to increase HPV vaccination acceptability among mothers of young girls. *Health Psychology*, 29, 29-39. doi: 10.1037/a0016942. Retrieved from

<http://home.kelley.iupui.edu/dcox/behavioralinterventions.pdf>

- Malouf, P.J., Hendriksz, T., & Foy, J. (2012). Strategies for increasing adolescent compliance with vaccination against human papillomavirus. *AOA Health Watch: Pediatric and Adolescent Vaccinations*. Retrieved from [http://www.cecility.com/aoa/healthwatch/june\\_12/print4.pdf](http://www.cecility.com/aoa/healthwatch/june_12/print4.pdf)
- Merck Sharp and Dohme Corporation. (2015). *Gardasil: Vaccination series completion*. Retrieved from <https://www.merckvaccines.com/Products/Gardasil/Pages/seriescompletion/tab/4>
- National Vaccine Advisory Committee. (NVAC). (2013). *Update on the national vaccine advisory committee standards for adult immunization practice*. Retrieved from <http://www.hhs.gov/nvpo/nvac/reports/nvacstandards.pdf>
- Nursing Theory (2015). *Lewin's change theory*. Retrieved from <http://www.nursing-theory.org/theories-and-models/Lewin-Change-Theory.php>
- Saraiya, M., Steben, M., Watson, M., & Markowitz, L. (2013). Evolution of cervical cancer screening and prevention in United States and Canada: Implications for public health practitioners and clinicians. *Preventative Medicine*, 57, 426-433. doi: 10.1016/j.ypmed.2013.01.020. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4515308/pdf/nihms708717.pdf>
- Suh, C.A., Saville, A., Daley, M.F., Glazner, J.E., Barrow, J., Stokley, S., Dong, F., Beaty, B., Dickinson, L.M., & Kempe, A. (2013). Effectiveness and net cost of reminder/recall for adolescent immunizations. *Pediatrics*, 129, 1437-1445. doi: 10.1542/peds.2011-1714. Retrieved from <http://pediatrics.aappublications.org/content/129/6/e1437.full.pdf+html>
- U.S. Department of Health and Human Services. (2015). *Healthy people 2020: Objective IID-11.4: Increase the vaccination coverage level of 3 doses of human papillomavirus (HPV)*

*vaccine for females by ages 13 to 15 years.* Retrieved from

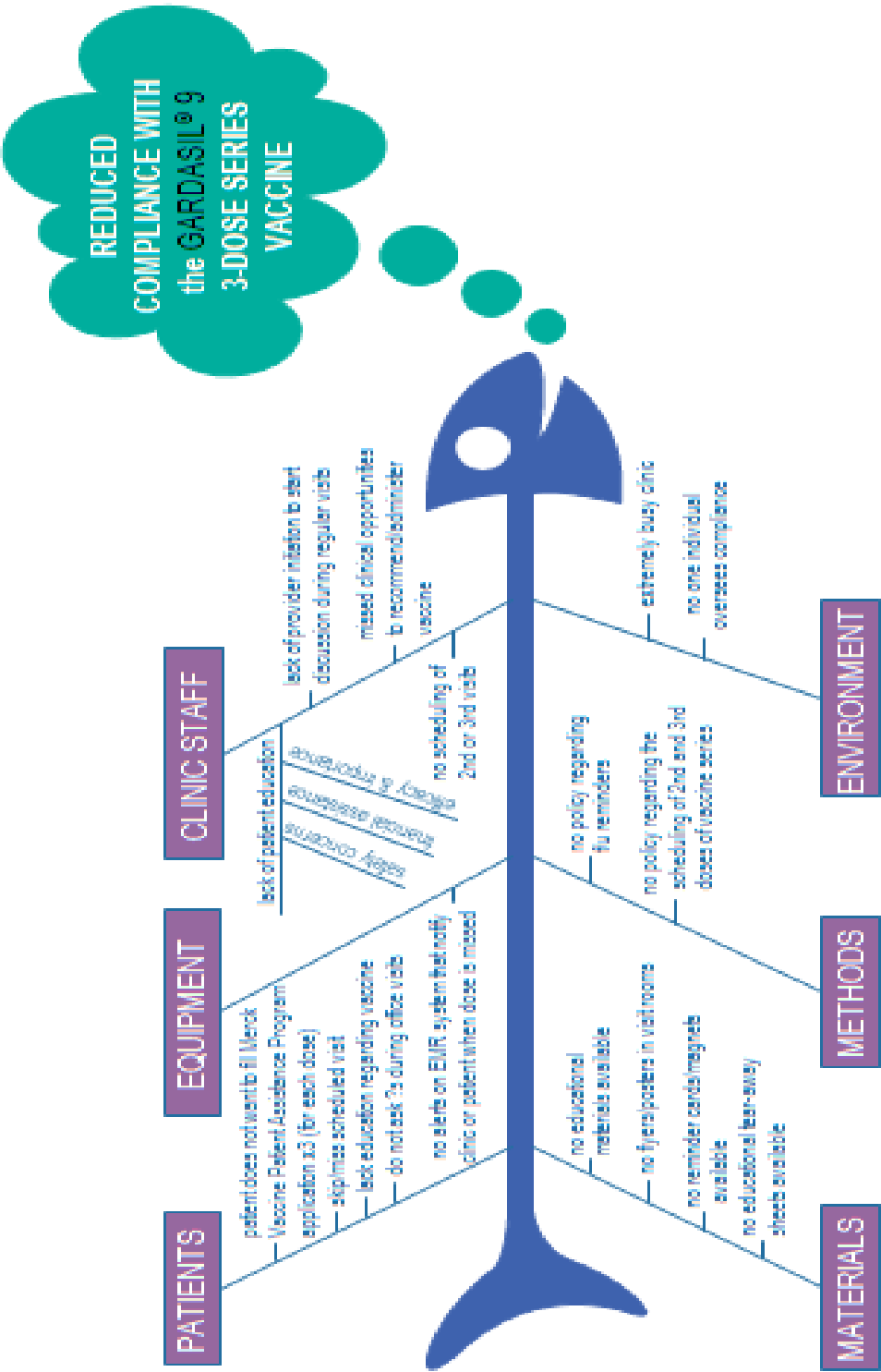
<https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases/objectives>

U.S. Department of Health and Human Services. (2015). *National vaccine advisory committee* (NVAC). Retrieved from <http://www.hhs.gov/nvpo/nvac/index.html>

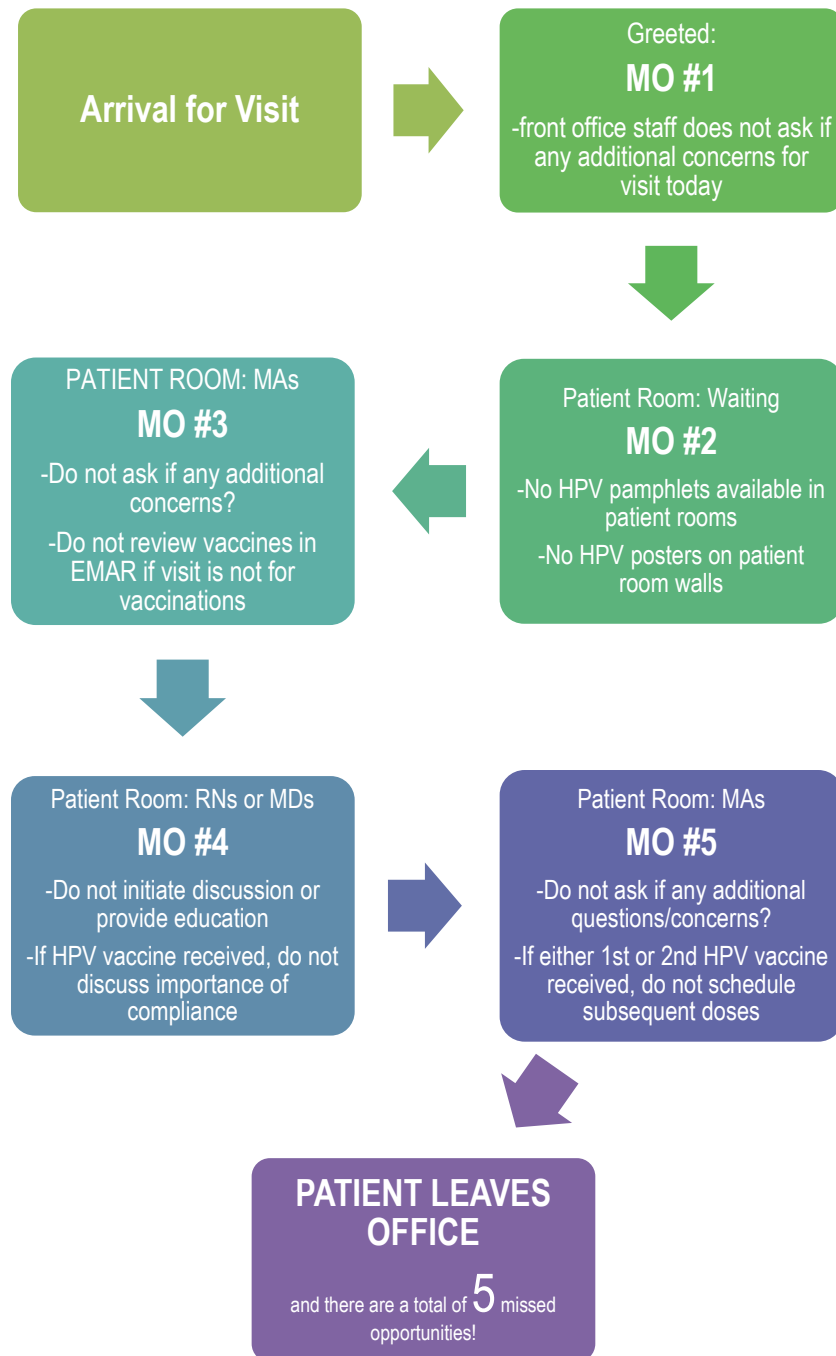
U.S. Department of Health and Human Services. (2013). *President's Cancer Panel Annual Report 2012-2013: Accelerating HPV vaccine uptake: Urgency for action to prevent cancer.* Retrieved from <http://deainfo.nci.nih.gov/advisory/pcp/annualReports/HPV/index.htm#sthash.81poHOim.4if5cnJw.dpbs>

Appendix A:

Root Cause Analysis: Fish-Bone Diagram

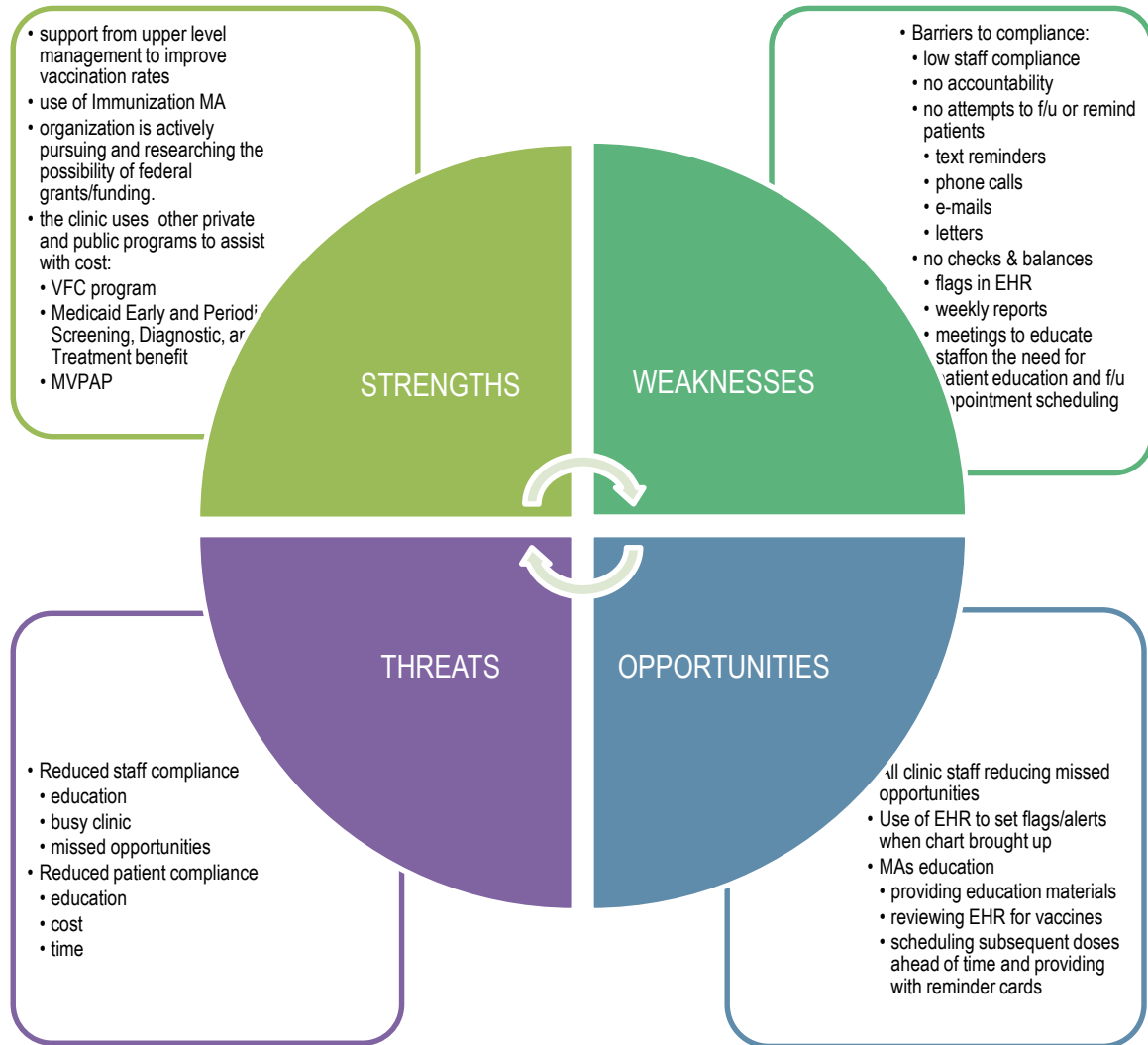




*Appendix B:**Process Map: Flow Chart*

\*MO = Missed Opportunity

*Appendix C:*  
*SWOT Analysis*



*Appendix D:**Cost Analysis*

## Step One: COSTS

◦Calculate your costs:

- Time spent: ~200 hours (~\$40/hr) = \$8000
- researching/writing/presenting ~40 = \$1600
- at the clinic (phone calls, education) ~130 = \$ 5200
- at organizational meetings ~15 = \$600
- with staff education ~15 = \$600

## Step Two: BENEFITS

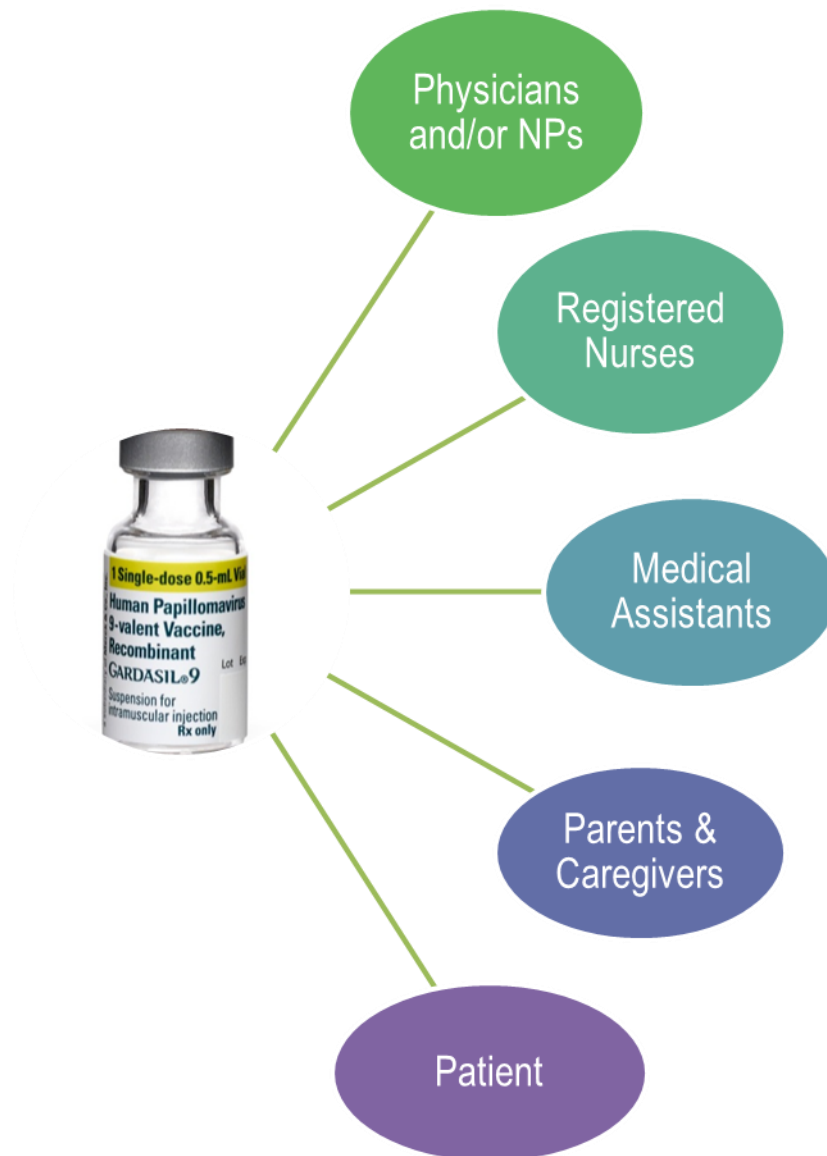
While improving HPV vaccination compliance rates is the goal, the organization would benefit from an increased number of vaccinations as a result of increased patient participation in the VFC program. Current estimated cost of the Gardasil® 3-dose series is ~\$263 per dose (= \$789 for full 3-dose series). Current estimated cost with use of VFC is \$0 for each and all 3 doses. Individuals who are 19-20 years of age and qualify for Medicaid also pay \$0 for each and all 3 doses. In addition the MVPAP program can also provide the vaccination(s) at no cost dependent if individual fulfills criteria. If the patient does not fall within the above programs, the clinic charges \$175 per dose (= \$525 for full 3-dose series). Many clients are without insurance and will therefore make scheduled payments to cover costs. All individuals will be charged on a sliding scale (dependent on income and insurance) \$0-10 Administration Fee, which covers time, supplies, and administration.

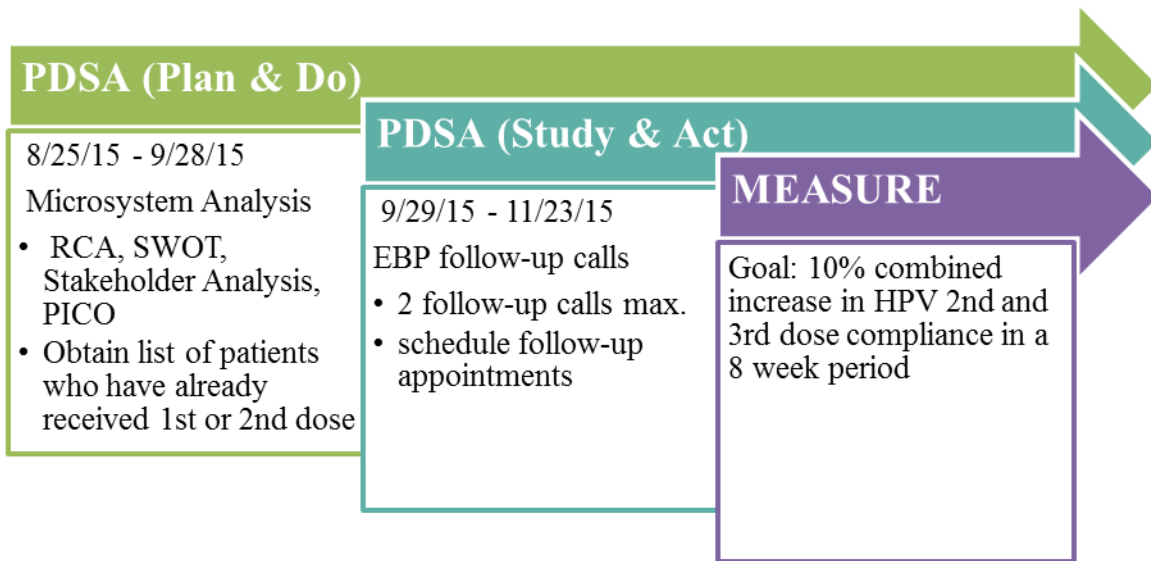
### Step Three: NET BENEFITS

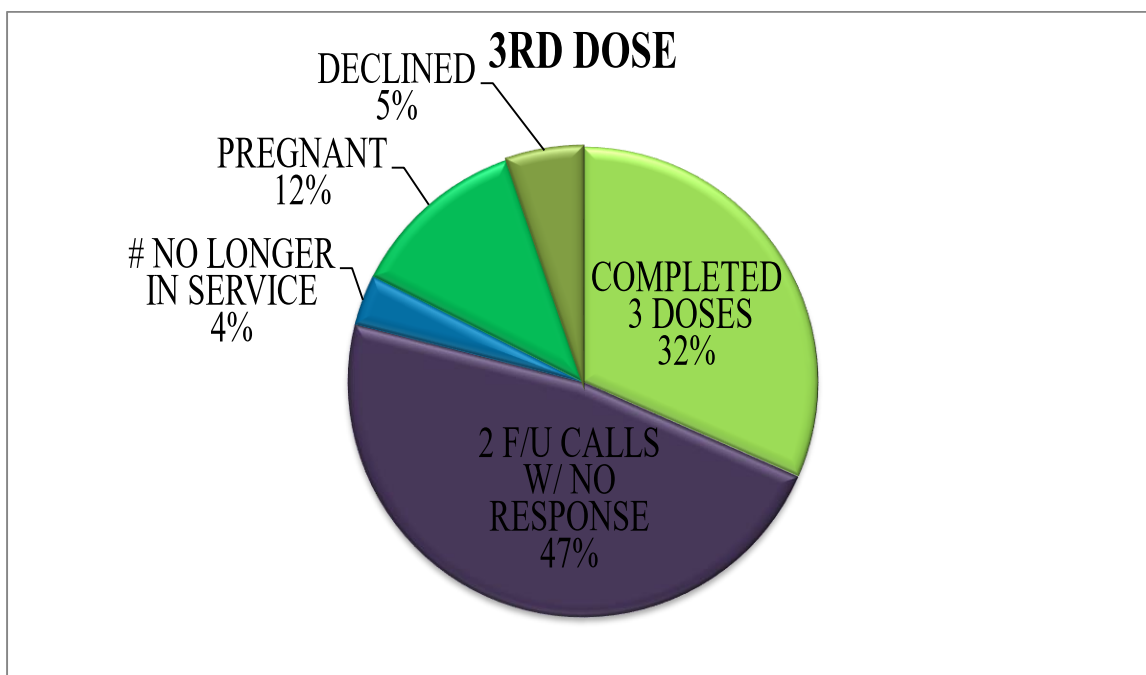
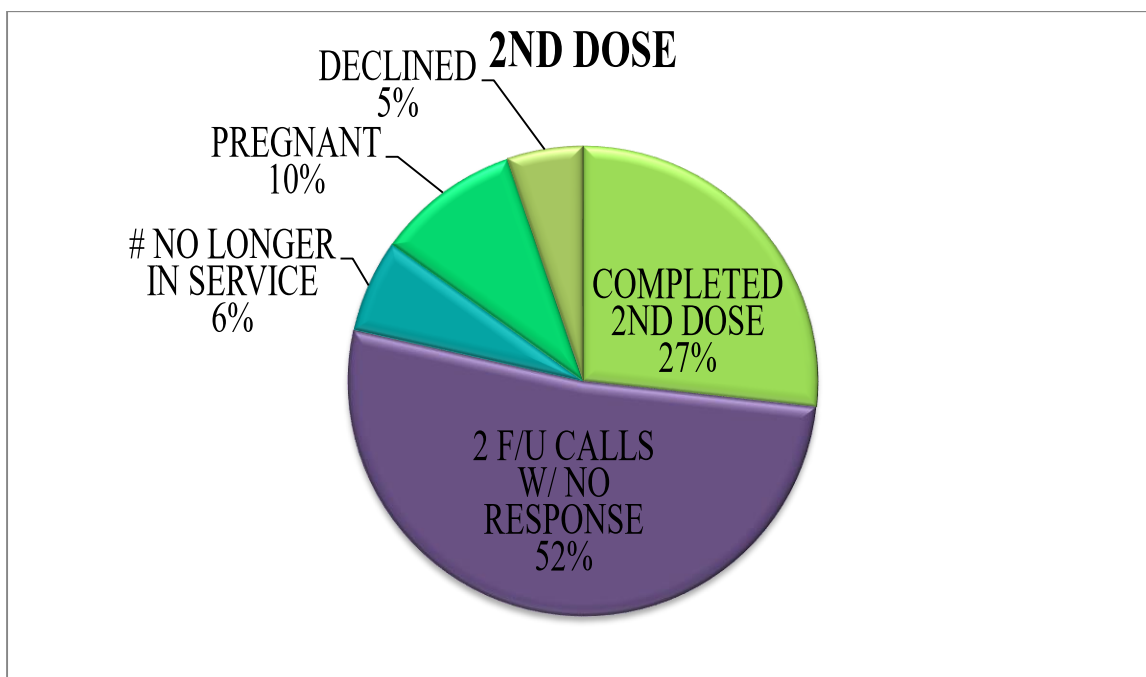
The goal is to increase vaccinations by 10% or approximately 237 individuals (including both 2<sup>nd</sup> and 3<sup>rd</sup> dose individuals). At a rate \$175 per dose (\$525 for all 3 doses), benefits would equal \$41,475 - \$124,425 for an approximate 10% increase. The net benefit would be ~ \$33,475 - \$116,425. These figures are dependent on whether or not the individual partakes within the VFC, Medicaid, MVPAP, private/public insurance, or pays out-of-pocket.

### Step Four: QUALITATIVE BENEFITS

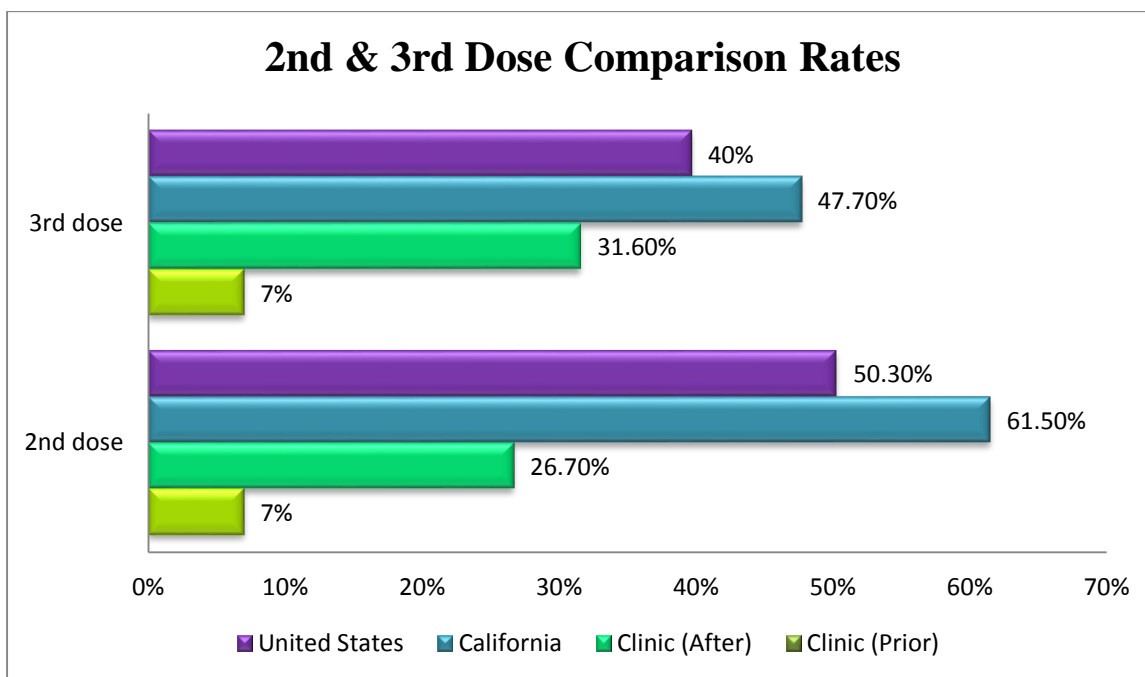
The qualitative benefits from this project would include quality of life (i.e. reduced risk of cancers and other related infections, longer life expectancy) for patients, and improved HPV compliance rates for our clinic in particular. As this organization runs 13 clinics, it would be wonderful to see if implementation of follow-up phone calls at one clinic was effective enough to spread to all 13 clinics, thereby improving the organization's overall HPV vaccination compliance rate.

*Appendix E:**Stakeholder Analysis*

*Appendix F:**PDSA Ramps*

*Appendix G:**Results*

*Appendix G:*  
*Comparison Rates*





Appendix H:  
Timeline

