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HPV Vaccination in Latin America

LESSONS LEARNED FROM A PILOT PROGRAM IN PERU



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Headquartered in Seattle, Washington, PATH operates 30 offices in 21 countries.

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Penny ME, Bartolini RM, Mosqueira NR. *Evaluation of a One-Year HPV Vaccine Delivery Demonstration Project in Peru*. Lima, Peru: IIN; 2009.

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A girl in Chulucanas, Piura receives her third dose of HPV vaccine through a demonstration project implemented by the government of Peru with technical support from PATH.

Executive Summary

In 2006, PATH initiated the *HPV Vaccines: Evidence for Impact* project in order to help make vaccines to prevent cervical cancer available to women worldwide—especially in countries where women are most likely to die of the disease. To help address the fact that women in these countries often face delayed access to new health technologies, the HPV Vaccines project aims to generate evidence to help policymakers and planners make informed decisions regarding regional and national vaccine introduction efforts and international financing plans.¹

The project is being implemented in four countries: India, Peru, Uganda, and Vietnam. Peru has some of the highest cervical cancer incidence and mortality rates of the Latin American and Caribbean region. Through a demonstration project in 2008–2009 in selected areas of the country, HPV vaccine was made available to all girls aged nine years or older in grade five. The Peru project was implemented by the National Expanded Program for Immunization (ESNI) of the Ministry of Health (MINSA) with technical support from PATH, and evaluated by MINSA/ESNI, PATH, and the Instituto de Investigación Nutricional (IIN).

Lessons learned from Peru may be applicable to other countries with similar cultural, economic, and health contexts. This report interprets the results and summarizes helpful lessons for policymakers and program managers looking to design their own HPV vaccination programs.

Lessons learned: Developing and implementing an HPV vaccination strategy

TARGET GROUPS AND VENUES FOR VACCINATION

- Lesson 1:* Delivering HPV vaccine through easily accessible primary schools can achieve high coverage levels at reasonable incremental program costs.
- Lesson 2:* Early coordination between the health and education sectors is necessary to establish a feasible vaccination schedule for a multi-dose vaccine.
- Lesson 3:* Health workers should aim to visit schools just once per dose, and follow-up of girls who miss doses should be carried out through health centers.

OPERATIONAL ISSUES

- Lesson 4:* Carefully scheduling vaccine requests can help optimize cold storage capacity.
- Lesson 5:* Approaches to parental consent should be the same for all vaccines.
- Lesson 6:* A vaccination program protocol can help to maintain quality, facilitate training, standardize delivery, and engender community trust.
- Lesson 7:* Teachers can provide lists of girls eligible for vaccination.
- Lesson 8:* Clear, concise guidance is required to standardize adverse event reporting.
- Lesson 9:* Vaccination reporting systems should be designed to minimize health worker burden and confusion.

Lessons learned: Training, community mobilization, and information and education

HEALTH WORKER AND TEACHER TRAINING

- Lesson 10:* Training health workers and teachers to become trainers themselves increases motivation and builds in-country capacity.
- Lesson 11:* A participatory approach and simple, visual training materials are key components of an effective training strategy.
- Lesson 12:* The value of intensive training must be balanced with the expense and time required for implementation and participation.
- Lesson 13:* For school-based vaccinations, teachers require tailored outreach that is less time-intensive than training sessions designed for health workers.

COMMUNITY OUTREACH

- Lesson 14:* Using a range of approaches to community outreach is important, including mass media.
- Lesson 15:* Initial resistance to vaccination can be overcome by giving parents time to gather information and providing evidence-based education and outreach for decision-making.
- Lesson 16:* Trusted and influential individuals in the community can serve as champions and information sources regarding vaccination.
- Lesson 17:* The health and education sectors play complementary roles in community outreach.
- Lesson 18:* Girls themselves play a key role in educating parents and each other about vaccination.

MESSAGING

- Lesson 19:* Effective educational messages address community needs, doubts, and concerns.
- Lesson 20:* Addressing the desire to prevent or avoid cancer and have a healthy future, and reinforcing positive views of vaccination, are good building blocks for key messages.
- Lesson 21:* Simple language and pictures are best to convey key messages for diverse audiences.
- Lesson 22:* People will seek out supplementary information independently.

Introduction

In 2006, PATH initiated the *HPV Vaccines: Evidence for Impact* project in order to help make vaccines to prevent cervical cancer available to women worldwide—especially in those countries where women are most likely to die of the disease. New vaccines—Merck’s Gardasil® and GlaxoSmithKline’s Cervarix™—against human papillomavirus (HPV), the primary cause of cervical cancer, have been extensively tested and are licensed for use in more than 100 countries. Low- and middle-income countries often face significant obstacles to integrating new vaccines in their national immunization programs, meaning that the people living in these countries must wait many years for access to life-saving interventions currently available in higher-income settings. The HPV Vaccines project aims to generate evidence to help policymakers and planners worldwide make informed decisions regarding regional and national vaccine introduction efforts and international financing for improved cervical cancer prevention.¹

The project is being implemented in four countries: India, Peru, Uganda, and Vietnam. Peru has some of the highest cervical cancer incidence and mortality rates of the Latin American and Caribbean region²: each year, approximately 35 women per 100,000 population develop

Unique characteristics of HPV vaccines

Although developing countries often face a common set of challenges introducing new vaccines into their national immunization programs (including financing, health worker training, strengthening cold chain and storage capacity, and educating communities), some attributes of HPV vaccines raise unique challenges. A robust evidence base from diverse countries, like that generated through the *HPV Vaccines: Evidence for Impact* project, is therefore especially important in facilitating access for girls everywhere.

- **Optimal age range for vaccination:** HPV vaccines are 90% effective in preventing infection with the two kinds of HPV that cause about 70% of cervical cancer cases—but only in girls and women with no prior HPV infection.³⁻⁷ Because peak incidence of HPV occurs soon after the onset of sexual activity, immunization should occur before sexual initiation. Therefore, young adolescent girls are the appropriate target group for HPV vaccination, as recommended by the World Health Organization.⁸
- **Gender:** HPV infection is common among boys and girls; however, while boys can transmit HPV, they cannot develop cervical cancer. The potential benefit of vaccinating boys is still under investigation.⁹
- **Sexually transmitted infection and disease of the reproductive system:** HPV is a sexually transmitted infection, and parents in some countries have worried that the vaccine might encourage their daughters to initiate sexual activity at an earlier age.¹⁰⁻¹² Project results from India, Peru, Uganda, and Vietnam have shown that this was not a major concern for parents in these countries.¹³ However, because the cervix is part of the reproductive system, some parents in these countries were concerned that the vaccine might adversely affect their daughter’s fertility.
- **Long delay in benefit:** Many vaccines prevent diseases that progress rapidly in young children; by contrast, cervical cancer does not usually develop until a woman is an adult, decades after the target age of vaccination. The benefits of HPV vaccination are therefore less immediate than with other vaccines.

new cases of cervical cancer and 16 women per 100,000 die.¹⁴ Lessons learned in Peru may be applicable to other countries with similar cultural, economic, and health contexts.

In 2006 and 2007, formative research was conducted in Peru to gather information on cervical cancer-related beliefs, values, attitudes, and behaviors of girls, their parents, health workers, teachers, community leaders, and policymakers.^{15,16} The formative research helped shape a vaccine delivery strategy, a communications strategy, and an advocacy strategy that were implemented through a demonstration project. The demonstration project was conducted in 2008–2009 in rural, urban, and peri-urban areas of the coastal region of Piura. The vaccine was available to all girls aged nine years or older in grade five of all state and private primary schools. In addition, fifth-grade girls in 54 schools in the jungle region of Ucayali and the mountains of Ayacucho were offered vaccination in 2008.

Regional HPV vaccination plans for the demonstration project were developed by the Regional Health Directorates (DIRESA) in Piura, Ayacucho, and Ucayali that defined activities, human resources, materials, and timelines. The National Expanded Program for Immunization (ESNI) of Peru's Ministry of Health (MINSA) provided vaccinations with technical support from PATH, using existing health and education systems at regional and provincial levels.

The Instituto de Investigación Nutricional evaluated vaccine coverage, acceptability, and feasibility of the strategies implemented in the demonstration project, while MINSA/ESNI and PATH collaborated to estimate the associated costs. The results of the evaluation will be published in detail elsewhere (see box, below). This report interprets the results and summarizes helpful lessons for policymakers and program managers looking to shape their own HPV vaccination programs.

Results from Peru's demonstration project

Detailed results on coverage, acceptability, feasibility, and implementation cost from the demonstration project in Peru will soon be available elsewhere, but a summary is included here.

- Coverage rates were above 80% in all Peru project sites, and loss to follow-up of girls who started the three-dose series was low.
- Incremental program costs^{*} of reaching girls with the HPV vaccine were lower in urban and peri-urban locations than in remote rural areas, since health workers could more easily access schools to reach eligible girls.
- Vaccinating girls in schools was judged feasible, based on its negligible impact on routine infant immunization coverage.

At the time of this writing, MINSA is also exploring a health facility-based vaccination strategy to determine if the human and financial resources required are similar to a school-based approach and thereby inform national decision-making regarding an HPV vaccine program.

^{*} Program costs include two main components—start-up or introduction costs and recurrent costs. Start-up costs include all microplanning, sensitization, awareness-raising, and one-time training. Recurrent costs include the supply costs for injection devices, personnel costs for staff time spent on the HPV vaccination activities, and capital and variable costs for transportation and vaccine storage. The program costs do not include the value of the vaccine, since the price per dose for public sector immunization was not known at the time of the program.

LESSONS LEARNED:

Developing and implementing an HPV vaccination strategy

TARGET GROUPS AND VENUES FOR VACCINATION

LESSON 1: Delivering HPV vaccine through easily accessible primary schools can achieve high coverage levels at reasonable incremental program costs.

Although the vaccine is licensed in Peru for girls and women aged 9 to 26, HPV vaccines are most effective in young adolescent girls prior to sexual initiation (see box, page 5).⁸ Armed with this knowledge, the project and the government jointly analyzed school attendance rates and ages by grade to determine the best target group for the demonstration project. Given that Peru has high attendance rates in grade 5—estimated to be above 95%—and lower rates in sixth grade and secondary school,¹⁷ girls aged nine and older studying in grade 5 were chosen as an appropriate target group.

In general, a high level of coverage was achieved when the vaccine was delivered at primary schools to girls enrolled in the fifth grade (see box, page 6). In urban and peri-urban areas, where the majority of the population resides and where health facility staff could easily access mid- to large-sized schools, the additional program costs, not including introduction costs, were

How much does it cost to provide the HPV vaccine?

Detailed results on the cost of Peru's approach to HPV vaccine delivery will be reported elsewhere. In brief, the evaluation found that administering the HPV vaccine through a school-based strategy is more expensive in rural than in urban areas. Additionally, start-up and initial supervisory costs, including for mobilizing communities, training staff, and raising policymaker awareness, represent a large share (about 35%) of the program expense for new HPV vaccination programs. These costs will decrease over time, as the program becomes more established.

In terms of recurrent cost, outreach costs associated with health workers delivering the vaccinations at the school-based setting were among the most important. These costs represent the cost of health workers transporting vaccines from the health center or health post to the school, vaccinating girls in the school, and returning to the health center. They include daily travel allowances or per diems and the costs associated with any mode of transport, such as use of a MINSa vehicle, taxi, public transport, or walking. The cost per girl in remote regions can be higher than for other areas, due to the need for overnight per diem, higher transportation costs, and the smaller number of girls per vaccination session.

As noted, the costs of school-based delivery of the HPV vaccine are similar to program costs for campaigns and supplemental immunization activities that reach target groups outside of the routine infant immunization program.

HPV vaccine program costs must be taken into consideration, along with the cost of HPV vaccine itself. To ensure high coverage rates, sufficient resources for microplanning, outreach, sensitization, and supervision will be needed—especially if the goal is to maintain high coverage rates.

approximately US \$1.00 to \$1.30 per dose delivered (i.e., around \$3.00 per girl fully vaccinated) (see box, page 7). The incremental costs of this approach are similar to program costs for campaigns or supplemental immunization activities that reach target groups falling outside of the routine immunization program for children under one year of age. However, some rural schools were so remote and sparsely populated that reaching girls in these areas (20% of all eligible girls in the demonstration project) came at a much higher program cost than in more accessible locations—which reflects the overall challenge of increasing access to preventative health care for underserved populations (see box, below).

Ongoing collaborations between the health and education sector can help overcome challenges in rural areas

In some cases, reaching schools in remote rural areas to vaccinate girls was difficult. However, this is true for all health interventions, not just HPV vaccines. Families in rural areas were often very grateful to health workers for making the effort; in some mountain communities, families provided housing and meals to vaccinators who had walked as many as five hours to reach them.

Location impacts service delivery, but other factors can be more important for achieving high coverage. For example, one rural school was able to achieve 100% coverage due to the fact that female teachers worked closely with community mothers and girls to educate them about the vaccine, and also because the school has a strong history with preventive health interventions. In general, strong ties existed among the school, the health sector, and the community. By contrast, schools in another rural area achieved only 50% coverage. In these cases, teachers did not become involved in vaccination activities, which meant that there was a significant burden on health workers to conduct community outreach.

LESSON 2: Early coordination between the health and education sectors is necessary to establish a feasible vaccination schedule for a multi-dose vaccine.

In some places, educational authorities and teachers worked with the health sector to plan vaccination before the school year began; in others, planning started only after the school year started. Due to the dosing schedule for HPV vaccine (three doses over six months), it was difficult to administer three full doses of vaccine within one school year if vaccination did not begin early in the school calendar. In addition, close coordination meant that teachers were able to inform girls and their families of the health workers' upcoming visits well in advance of the scheduled date.

LESSON 3: Health workers should aim to visit schools just once per dose, and follow-up of girls who miss doses should be carried out through health centers.

Inevitably, some girls will be absent from schools on days that vaccination is offered. Health workers sometimes had to make as many as four trips to schools to complete vaccinations for all eligible girls, which increases the overall transportation and personnel costs of the intervention. Early coordination with school personnel helped to achieve higher school

attendance and thus higher coverage at the first visit. The results suggest that girls who miss vaccination at school should be reminded to obtain it at the nearest health center. Alternative strategies for reaching girls who miss the first dose might include taking advantage of opportunities to integrate vaccination in other activities (e.g., social programs, markets, or fairs), especially in rural areas.

OPERATIONAL ISSUES

LESSON 4: Carefully scheduling vaccine requests can help optimize cold storage capacity.

The early formative research in Peru revealed that there could be insufficient cold storage available for the three-dose HPV vaccine (especially in the context of multiple concurrent vaccination campaigns).^{15,16} In order to address this issue proactively, health workers at the local level ordered and picked up vaccine supplies from regional centers closer to the date of vaccination in order that the vials required storage for a shorter period of time. Health personnel confirmed after the demonstration project that they didn't have major problems with the cold chain.

LESSON 5: Approaches to parental consent should be the same for all vaccines.

In accordance with Peru's guidelines, in addition to obtaining prior verbal assent for vaccination from the girls themselves, parents were requested to sign a written authorization for HPV



Girls practice the “jelly arm” technique prior to immunization (see page 17).

vaccination. This was seen as an unusual request in places where written authorization was not consistently required from parents during a concurrent hepatitis B vaccination campaign. The difference in process aroused suspicion in some parents that the HPV vaccine was somehow more risky. This was particularly a problem in Bajo Piura, where the Minister of Health also happened to visit a health facility close to the time HPV vaccinations were taking place and found an expired vaccine vial (but not an HPV vaccine) in a refrigerator. This occasioned publicity, and the combination of these two circumstances engendered some resistance to vaccination in general and the HPV vaccine specifically among parents and others in the community.

LESSON 6: A vaccination program protocol can help to maintain quality, facilitate training, standardize delivery, and engender community trust.

Vaccinations under the project followed a simple written protocol detailing the procedures a health worker should follow before, during, and after vaccination. In addition, the protocol emphasized quality of care, based on concerns that were expressed by some girls and parents during the formative research.^{15,16}

Overall, health workers felt that using a protocol like this was a sustainable approach for vaccination. In particular, it helped to define the roles and steps of the vaccination process. It also served as an easily accessible refresher tool for health workers and facilitated training of new personnel. Many health workers noted that the vaccination protocol gave them confidence. For example, nurses noted that it helped them focus not only on steps required for vaccination, but also on things like privacy, adverse effects monitoring, and hygiene—in other words, to balance needs related to both coverage and quality of service.

LESSON 7: Teachers can provide lists of girls eligible for vaccination.

At the outset of the project, it was determined that the lists of girls eligible for vaccination (required for planning for vaccine supply), would come from school fifth-grade registers. However, health centers faced many obstacles and delays in accessing these lists, which in turn delayed the start of vaccination. In fact, lists collected by the Local Educational Management Unit often were not finalized until the end of the first semester (or in some cases, the end of the school year) due to dropouts and student transfers. Therefore, lists prepared by teachers were used instead. If this approach is used, clear instructions are required that all eligible girls should be included in the list: some teachers included only girls who submitted a signed consent form, which can affect record-keeping and coverage estimates.

LESSON 8: Clear, concise guidance is required to standardize adverse event reporting.

No severe adverse events were reported in any of the regions.* Minor adverse events did occur, although they were uncommon. For example, some girls experienced dizziness or felt faint,

* Adverse event monitoring followed the routine MINSA system for detection, investigation, management, and reporting used for all vaccinations included in Peru's national immunization program. Following vaccination, girls were observed for at least 15 minutes, and staff and medications were on hand to treat any severe adverse events that might occur during the observation period.

mainly (it was thought) due to anxiety regarding vaccination or empty stomachs. However, relatively higher—although still quite low—rates of minor adverse events were reported following the first-dose vaccination in Ayacucho than in Piura or Ucayali. Although guidelines were available for health workers on adverse event reporting, they were perceived to be quite long and complex. Synthesizing these guidelines into clear, concise action points for health workers could have helped to ensure consistent reporting practice.

LESSON 9: Vaccination reporting systems should be designed to minimize health worker burden and confusion.

Reporting the number of girls vaccinated followed routine channels. The standard reporting form was adapted for tracking a three-dose vaccine, an identified need from the formative research.^{15,16} Per routine procedures, however, the forms were also supposed to be submitted on a daily basis. Because it sometimes took more than one day to vaccinate a cohort of girls in one class, this could result in the same report sheet being submitted multiple times. This was especially problematic when health workers were required to send hard-copy originals to central level, and did not have photocopiers available to make copies of records for themselves. A system under which registers could be submitted once the entire cohort of girls has been vaccinated would be a more efficient approach.



A health worker completes an HPV vaccination reporting form.

LESSONS LEARNED:

Training, community mobilization, and information and education

HEALTH WORKER AND TEACHER TRAINING

LESSON 10: Training health workers and teachers to become trainers themselves increases motivation and builds in-country capacity.

For the demonstration project, selected health personnel were trained as regional trainers in a two-day course. These health workers then trained people in their districts, including health workers and teachers, who then became trainers of their colleagues at the local level. Health workers and teachers who were trained to become future trainers of their colleagues reported feeling much more involved in implementation of vaccination than usual and more important in terms of the program's eventual success. Nurses in particular highlighted that they felt more like leaders of the vaccination program, rather than just vaccinators. Health workers also appreciated that training techniques and approaches they learned were relevant for use in other areas of their work and would help strengthen their capacity as trainers in general.

LESSON 11: A participatory approach and simple, visual training materials are key components of an effective training strategy.

The vast majority of health workers provided positive feedback on the training process, and particularly appreciated the participatory approach. They felt there were many advantages to this approach compared with normal, didactic trainings that can involve long periods of simply sitting and listening. For example, health workers felt that simulating situations they would face in the field (e.g., interacting with parents or coordinating with teachers) was helpful, and practicing different components of their work in advance made it easier to remember the steps during implementation.

Health workers and teachers also felt that the simple, visual materials developed for the training helped them to assimilate and retain information. In particular, they appreciated that no PowerPoint was used. Because electronic media were not used or required for the trainings, this also made it a replicable approach at the lower levels of the health system where projectors would not be available. For example, the workshops could be implemented using only flip-chart paper and copies of the materials provided.

LESSON 12: The value of intensive training must be balanced with the expense and time required for implementation and participation.

Although participant feedback on the training was generally positive, some health workers and teachers felt that the trainings should be shorter than two days—especially given that training required time away from regular work. Costs of transportation and training coordination can be significant. One way to address these challenges is to integrate training for HPV vaccination programs into already scheduled or routine training activities (e.g., health worker training on vaccination). Additionally, while using staff as trainers has many benefits, it also means that

health worker and teacher trainers have an extra burden of work. Support from supervisors for these activities was critical to effective implementation.

LESSON 13: For school-based vaccinations, teachers require tailored outreach that is less time-intensive than training sessions designed for health workers.

There were many benefits to involving teachers more directly in preparing for vaccination planning. For example, teachers appreciated the opportunity to learn more about the vaccine, the health condition involved, and how to educate parents and girls on these issues—in the past, they were usually just told the date of upcoming vaccinations and expected to help gather the eligible students. Additionally, many teachers who attended the training came with serious questions and concerns about the vaccine, including why it was for one particular age group and why written consent was required when that was not the case for other vaccines. Some teachers also expressed concern that the vaccine might sterilize girls. The trainings helped to address these doubts.

Given the time and financial resources required for formal training, however, project results suggest that a different approach to involving teachers which is less focused on training and more focused on simply providing relevant information may be more feasible and sustainable. The key seems to be empowering teachers by giving them information and ideas regarding how to teach girls about HPV vaccination, but formal training workshops are not necessarily required to achieve this. As noted previously, another option might be to provide information and education on HPV vaccination at forums where teachers are already gathering.

Timing of training of different groups should also be considered. Training health facility staff first had the advantage of preparing them to serve as consistent and reliable information sources to teachers and community members following teacher trainings and other outreach activities.



A teacher in Yarinacocha, Ucayali displays photos demonstrating cervical cancer progression as part of a community education session.

COMMUNITY OUTREACH

LESSON 14: Using a range of approaches to community outreach is important, including mass media.

Considerable awareness was raised in communities, including among parents and girls through interpersonal communication strategies—approaches that focused on education by teachers or health workers. However, using mass media, especially local radio stations, to disseminate information about the HPV vaccine also helped to raise awareness and reinforce key messages (see box, below). Posters and banners were also put up on the front of the health facilities and some schools (see photo, page 19). Many mothers and girls mentioned having seen the banners, which reassured them of the official nature of the vaccination process. Leaflets that parents could take with them from educational sessions also helped reinforce learning.

LESSON 15: Initial resistance to vaccination can be overcome by giving parents time to gather information and providing evidence-based education and outreach for decision-making.

Feedback from parents and their daughters indicated that although many initially reacted to the new vaccine with skepticism and doubt, these doubts were overcome by educational efforts by teachers and health workers, as well as information parents sought independently. This helped emphasize how crucial it is to include community outreach and education as part of new vaccine introduction, and to implement these activities in advance of the vaccination event; as one teacher put it, “I believe that the information and communication for parents is fundamental...[given] how beneficial the vaccine is and how much it is going to help women’s health...I don’t think the mothers will refuse.” In other words, decisions whether or not a girl would be vaccinated occurred over time in the context of initiatives and outreach by teachers and health personnel, influence of parents or relatives, and influence of the media and other social circumstances (see box, page 15).

Engaging journalists directly can be an important part of mass media campaigns

An important element of using mass media is to provide journalists with information prior to initiation of vaccination. Rather than just holding a press conference, gathering journalists for a participatory educational session can help them to understand the vaccine and the associated health condition being prevented. In particular, this allows journalists to effectively counter misinformation spread through informal channels. After the trainings for journalists, nearly 90% were supportive of HPV vaccination. Journalists also appreciated the interpersonal approach to community education; as one noted, “I believe it has been a good strategy. Journalists are usually the main transmitters of information; however, in this case, those who give the vaccine take our place and distortion and rumors are avoided. This communication strategy is different.”

LESSON 16: Trusted and influential individuals in the community can serve as champions and information sources regarding vaccination.

In cases where health personnel and/or teachers had good previous relationships with parents, they were able to follow up effectively with families who needed more information for decision-making about vaccination. One health worker mentioned a nurse who was very well known in the town and who helped many parents decide to vaccinate their daughters by reassuring them that the HPV vaccine is not dangerous (see box, page 16). School teachers informed about vaccination in advance not only became effective allies, providing parents and girls with information, but also pillars of support for health personnel during the vaccination process. They often worked closely with the girls to prepare them for the vaccinations as well. Many health workers mentioned that the girls were more willing to participate in vaccinations than in the past as a result.

In places where teachers were not involved in or supportive of vaccination, there was also distrust or lack of engagement among parents. For example, one health worker described how teachers at one school failed to actively coordinate educational community meetings, which meant that no parents showed up. As a result, that health worker traveled from house to house to educate parents—the work of an entire afternoon—and two additional girls participated in vaccination. While this is an admirable result, a supportive teacher or other ally might have made a difference using fewer resources (see box, page 17).

Influential leaders, who might also be health or education personnel, are effective sources of information about vaccination for girls and parents. The Minister of Health, the mayor, the manager of social development, and the director of education in Peru were all in favor of the HPV vaccine, which helped reassure parents regarding its safety and effectiveness and the fact that it was an official government activity. And, high-level MINSA staff stated publicly that they had vaccinated their daughters, which helped generate trust and confidence among the public.

Community outreach makes a difference

One girl shared the story of how she, her mother, and their friends came to accept vaccination: “I was afraid because people said the injection hurt a lot, so my mother spoke to me and told me not to be afraid, that it was used to avoid cervical cancer. We asked the nurse at the health center we went to, and she said they were giving the three doses free of charge due to a campaign by MINSA. She said we should take advantage of the opportunity...[but] there was even a mother that said ‘Don’t get your daughter vaccinated because it is very painful and she won’t be able to have any children in the future.’ However, my mom didn’t pay any attention to her because she had attended the [educational] sessions and the lady hadn’t. I think she didn’t know there had been any sessions but she should have gone if she had the chance to. Her daughter was vaccinated after she learned the benefits of the vaccine.”

LESSON 17: The health and education sectors play complementary roles in community outreach.

As one health worker put it when describing coordination between the health and education sectors, “two is better than one.” When teachers were conducting educational sessions with communities, especially in places where school health programs were less common, it was very helpful to have health workers to provide support and detailed information, if necessary. Similarly, teachers were able to support the health sector, building on their strong existing relationships with parents and girls (see box, page 17).

While school-based vaccination in Peru has generally involved coordination through written communications from the health to the education sector, a more proactive approach was taken in the case of HPV vaccination. Health personnel actually visited each school and provided information and education to the head teacher, who in turn facilitated teacher participation in training sessions and helped to coordinate dates for vaccination.

One important mechanism for this coordination was an ordinance issued by the Office of Promotion in Piura. This ordinance enabled close coordination between schools and health facilities in 21 districts by supporting all fifth-grade teacher involvement in HPV vaccination and permitting them to take time to participate in trainings.

LESSON 18: Girls themselves play a key role in educating parents and each other about vaccination.

Teachers and parents noted that girls themselves helped facilitate parental acceptance of the vaccine. In many cases, the girls received information from their teachers and became the first source of information for their parents. The fact that girls trusted their teachers and felt that they had their best interests at heart helped to make this strategy effective. One teacher mentioned hearing girls talk among themselves about securing their parents’ approval after an educational session: “They have to let us get vaccinated, or do you want to get cervical cancer?”

Health personnel are also information resources for their family and friends

Two girls told the following stories of how health personnel known to their families provided reassurance regarding the HPV vaccine:

“When I asked my mother, she said yes but my father said no...My mother had a friend that was a nurse so she asked her and her friend said it would allow me to have a better life. My mother then spoke to my father [again]; however, he continued saying no. When I woke up the next day, my parents were talking and they finally said I could be vaccinated...[My father had said no] because he didn’t know much about the vaccine.”

“I told my mother that I would be vaccinated. She immediately called my uncle who is a doctor and he said that I should get vaccinated because each dose was very expensive and it would protect me. That is why my mother agreed but my father said ‘Are you sure you want her to be vaccinated?’ My mother said ‘Yes, I called [my brother].’ After that my father agreed.”

Teachers as providers of evidence-based information

Teachers became important advocates for vaccination, and were especially helpful in countering misinformation about the vaccines. Below are the stories of a few teachers who helped support girls and their mothers to participate:

“They [the mothers] were surprised. When they were shown the before and after sheets [illustrating the impacts of cervical cancer]; they were moved. Even mothers who normally don’t want anything to do with vaccines. When I’d finished the talk, the mothers asked if it was possible to vaccinate them...”

“There was fear [about the vaccine]. I think that fear is natural, up to a certain point... a lot of mothers talked to me. So I explained to them and told them that it was their decision, not mine. But I explained the advantages. As in all campaigns, this fear is transmitted through information from non-authorized sectors. For example, there was that false information that the vaccine was going to cause sterilization and that it was a policy of the government of the United States... I explained to them, ‘If you think the United States is going to come here to kill or sterilize so many people, then I’m telling you: personally I don’t believe it. Bring me a document where it says that.’ They didn’t bring one. ‘If I were you, I’d vaccinate my daughter.’”

In addition, many girls who had some reluctance were reassured by seeing the vaccinations take place, and observing a calm, unhurried process. Teachers and health workers were trained to help girls to relax during vaccination. For example, they were told to relax their arm by loosening their hand—making a “jelly arm” (see photo, page 9).

MESSAGING

LESSON 19: Effective educational messages address community needs, doubts, and concerns.

Formative research can help develop communication and training strategies for vaccine introduction. Information should address the concerns of parents, as well as principal areas where there is lack of knowledge. In Peru, parents wanted more information about vaccine safety, side effects, and impacts of the vaccine on future fertility. Additionally, many parents did not know that cervical cancer is caused by HPV, that the HPV vaccine prevents the infection, and that the vaccine has to be given before sexual debut.^{15,16}

LESSON 20: Addressing the desire to prevent or avoid cancer and have a healthy future, and reinforcing positive views of vaccination, are good building blocks for key messages.

Reasons for parental acceptance of vaccination (see box, page 18) and results from the formative research^{15,16} help underscore the importance of connecting this particular vaccine directly with its ultimate purpose of preventing cervical cancer, and building on positive community perceptions about vaccination. It can therefore be helpful to refer to a “cervical cancer vaccine”

in outreach materials and educational events, while still explaining accurately what the vaccine does, and does not, do (for example, that it does not protect against all types of HPV).

For example, in one school, two fifth-grade girls told the nurse responsible for vaccination that they were scared HPV vaccination would be painful. The nurse, recalling from training that it was important to emphasize that the purpose of the vaccine was to prevent cervical cancer, asked the girls whether they would rather potentially develop cervical cancer later in life, or receive a little prick now.

LESSON 21: Simple language and pictures are best to convey key messages for diverse audiences.

The best methods for informing people and raising awareness of the HPV vaccine were educational materials that were clear and visual. Many girls and parents stressed the importance of these visual aids, as well as the use of simple words and interactive exercises that helped them to understand concepts relevant to HPV vaccination. The graphic mentioned most frequently was a sequence of photos illustrating the advance of cervical cancer, which helped people to envision something they said they previously had a hard time imagining (see photo, page 13). As one girl described, the head of health promotion at one center “brought us some information sheets that showed a cabbage that forms in our vagina.” One teacher who did not receive the visuals in time for her educational session felt that this limited the impact and credibility of her messages.

Reasons why parents accepted or refused HPV vaccination

Those parents who accepted HPV vaccine for their daughters gave the following reasons:

- Desire to protect daughter from cervical cancer and keep her healthy in the future
- Opportunity to take advantage of a free vaccine
- Perception that vaccines are good
- Advice of health personnel, teachers, or friends

Those parents who refused to have their daughters vaccinated mentioned the following:

- Requirement for a signed consent form, and difficulty understanding why the HPV information campaign or the authorization process was so different from the hepatitis B campaign
- Vaccine is being offered only to girls in the fifth grade
- News in the media regarding deaths related to other vaccines
- Fears about possible side effects, including sterilization or other reproductive effects
- Suspicions regarding the origins of the vaccine (e.g., rich countries)
- Insufficient information about the vaccine

Key messages for community outreach on cervical cancer vaccines

- What is cervical cancer?
- How is it contracted?
- What are the consequences of contracting the virus?
- How can it be prevented? (Through vaccination and screening)
- Vaccine information:
 - How many doses are required for a girl to be protected?
 - Is the protection permanent? What happens if it is not?
 - What are potential side effects?
 - Who should be vaccinated?
 - Where does vaccination take place?
- The importance of cervical cancer screening for the girls in the future, and screening for older women now.

LESSON 22: People will seek out supplementary information independently.

Many parents and girls ended up looking for information from other sources following the educational session on HPV vaccination or after they were informed it was going to take place. Generally speaking, these were the people who had doubts or needed reassurance. The sources of supplementary information mentioned were the internet, health personnel, the teacher, the head teacher, and especially relatives trained in the area of health (see box, page 16). The simple knowledge that the vaccination was taking place in other schools in Piura calmed the doubts of mothers in rural areas, while some mothers were also reassured by the campaign banner on the front of the health facility (see photo, below) or by checking that the vaccine actually existed and was being given in other places, both in and outside of Peru. Furthermore, some girls stated that seeing the actual box and vaccine indications helped reassure them and their mothers that it was a real medicine.



Girls hold up their vaccination cards outside a health center in Yarinacocha, Ucayali after receiving their third dose of HPV vaccine.

Conclusion

The purpose of the *HPV Vaccines: Evidence for Impact* project is to provide policymakers and program managers in low- and middle-income countries with the data they need to make decisions about introducing HPV vaccine in their national immunization programs. Girls and their parents in Peru overwhelmingly accepted vaccination, since they understood the issues. The positive results of this work have already been used by the government of Peru to consider national introduction of this vaccine, so that it will be available throughout the country. Ideally, the information gathered through this project will enable policymakers throughout Latin America, and globally, to engage in similar evidence-based planning processes.

Cervical cancer prevention resources

World Health Organization (WHO) cervical cancer publications
www.who.int/reproductivehealth/topics/cancers

WHO position paper on HPV vaccines
www.who.int/wer/2009/wer8415.pdf

Alliance for Cervical Cancer Prevention
www.alliance-cxca.org

Cervical Cancer Action coalition
www.cervicalcanceraction.org

RHO Cervical Cancer library
www.rho.org

Cervical Cancer Prevention Action Planner
www.rho.org/actionplanner

WHO/Institut Català d'Oncologia HPV Information Center on HPV and Cervical Cancer
www.who.int/hpvcentre

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