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## Human papillomavirus (HPV) vaccination motivators, barriers, and brochure preferences among parents in multicultural Hawai'i: A qualitative study

**May Rose Isnec Dela Cruz, DrPH,**

Papa Ola L kahi, 'Imi Hale Native Hawaiian Cancer Network

**Jo Ann Umilani Tsark, MPH,**

Papa Ola L kahi, 'Imi Hale Native Hawaiian Cancer Network

**John Jiangtian Chen, PhD,**

University of Hawai'i at M noa, John A. Burns School of Medicine

**Cheryl Lynn Albright, PhD, MPH, and**

University of Hawai'i at M noa, School of Nursing & Dental Hygiene

**Kathryn Lenzner Braun, DrPH**

University of Hawai'i at M noa, Office of Public Health Sciences & Papa Ola L kahi, 'Imi Hale Native Hawaiian Cancer Network

### Abstract

The human papillomavirus (HPV) vaccine can prevent cervical and other cancers. Unfortunately, according to the National Immunization Survey–Teen 2014 data, completion of the HPV vaccine was only 38% for 13 to 17-year-old girls and 31% for 13 to 17-year-old boys in the US, and prevalence was similar in Hawai'i. Parents' acceptability of the HPV vaccine is critical for the vaccine uptake, and this can be increased by educational materials and interventions. However, HPV materials are not widely distributed in Hawai'i. The purpose of this qualitative study was to identify HPV vaccination barriers, motivators, and brochure preferences among parents of teens in multicultural Hawai'i. Twenty parents were interviewed in person or by telephone. Four major themes emerged: (1) the physician is critical in the decision to vaccinate; (2) parental perception of the child's sexual activity guides the timing of their willingness to vaccinate; (3) HPV health education materials should be provided and discussed by the physician; and (4) Parents would prefer an educational brochure that features local faces and testimonials, includes an immunization chart, and addresses barriers to vaccination. These findings informed the development of HPV health education materials tailored to Asian Americans and Pacific Islanders in Hawai'i.

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Ethnic minority, low income, and immigrant women experience a high burden of cervical cancer in the United States (US) [1]. The human papillomavirus (HPV) vaccine can impact low-income and minority populations as a primary prevention tool [2], as vaccination reduces HPV-associated diseases such as cervical cancer, vulvar cancer, anal cancer, and

genital warts. Three doses over six months are recommended for adolescents at age 11 or 12, before they become sexually active. Vaccination at this age is important, as the prevalence of HPV infection generally peaks in the late teens or early twenties and declines thereafter [3].

The Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) has integrated the HPV vaccine in the Adolescent Immunization Schedule. This schedule includes the three-dose HPV vaccine with other recommended vaccines for children ages 11 to 12, which are Tdap (tetanus, diphtheria, and acellular pertussis vaccine) and the meningococcal conjugate vaccine (MCV4). Age-appropriate uptake of Tdap and MCV4 are at 88% and 79%, respectively [4]. Unfortunately, according to the National Immunization Survey–Teen 2014 data, completion of all three doses of the HPV vaccine is estimated at only 40% for 13–17 years old girls and 22% for 13–17 years old boys nationally. Hawai‘i’s HPV completion prevalence (receiving all three doses) was 38% for girls and 31% for boys [4]. The 2014 prevalence reported a 4 percentage point increase for girls from 2013 (34% to 38%). However, the 2014 prevalence of 38% represents a 13 percentage point decline for girls from 2011, which reported the highest prevalence at 51%.

Parental consent is needed to vaccinate adolescents. Thus, parent acceptance of the HPV vaccine is critical for the vaccine uptake. Previous research conducted with parents regarding their hesitancy in vaccinating their child with the HPV vaccine identified several barriers, including lack of physician’s recommendation, belief that the vaccine might encourage sexual activity, and financial constraints [5–7]. Other barriers include concerns about the vaccine’s safety, questions of its importance [8], and beliefs that the child was too young to receive it [9]. Also, ethnic minority, low income, and less educated parents are less likely than other parents to have heard of the HPV vaccine [10].

Research suggests that physicians are the main source of vaccine-related information [11] and that parents are more likely to vaccinate their child if the HPV vaccine was recommended by their child’s physician [12–13, 7]. Because Hawai‘i and most of the nation have neither school mandates nor school-based vaccination programs on the HPV vaccine, vaccination is largely dependent on communication between parents and their child’s physician [14].

Educational materials can help increase awareness of infectious diseases and ways to prevent them. To increase adolescent HPV vaccination uptake, the President’s Cancer Panel outlined three goals for the country [15]. One of these goals is to increase parents’, caregivers, and adolescents’ acceptance of HPV vaccines. An objective under this goal directed CDC to develop, test, and partner with organizations to adopt comprehensive communication strategies for parents and teens. The Panel also recommended that communication strategies include messages elicited through qualitative and quantitative research so that materials are sensitive to language, culture, and health-literacy levels of specific target populations.

A number of education materials on HPV vaccination are available, and some have been tested in the continental US [6, 16–18]. Yet a 2013 survey of 40 pediatric physicians’ offices in Hawai‘i found that few were stocking or offering educational materials on the HPV

vaccine [8]. Because about two-thirds of Hawai'i's population is of Asian and/or Pacific Islander ancestry, it is unknown if available HPV education materials are acceptable locally.

Thus, the purpose of this qualitative study was to identify HPV vaccination barriers, motivators, and brochure preferences among parents of teens in Hawai'i. The findings sought to inform the selection and/or development of an HPV vaccine educational brochure that would be perceived as culturally relevant to ethnic minority parents in Hawai'i.

## Methods

Data were collected from parents through face-to-face interviews (e.g., at a local coffee shop, restaurant, or home) or telephone interviews from October 2013 to January 2014. The one-on-one interviews allowed parents to provide detailed reasons why, in their own words, they decided to (or not to) vaccinate their child with the HPV vaccine. One-on-one interviews were considered preferable to focus groups because HPV is stigmatized as a sexually transmitted infection [19], and parents may prefer a private space to disclose and discuss HPV vaccine-related concerns.

Parents were eligible for inclusion if they had a child between 11 to 18 years old, were the parent or guardian who takes their child(ren) to get vaccinated, and lived in Hawai'i. The parents were recruited through snowball sampling [20], starting with friends and family of the principal investigator (MRDC), who referred other parents to the study. A university student parents' association listserv consisting of 1,500 e-mail addresses and a parent church group aided in recruitment when no other parents could be recruited through snowball sampling. These groups circulated a parent information sheet, and those who were interested contacted the principal investigator by e-mail or telephone. The recruitment continued until no new material arose from the interviews. All participants received a \$10 gift card to a local retail store as an incentive for participation. This study was approved by the institutional review board at the University of Hawai'i.

Parents could choose to be interviewed in-person or by phone. Those interviewed in person completed a written informed consent, and phone interviewees were mailed a consent form and related materials. All interviews began once signed consent was received.

The interview questions were adapted from the Carolina HPV Immunization Measurement and Evaluation Project [21]. Following the first five interviews, the principal investigator and a senior qualitative researcher revised the interview guide to improve the sequence of questions for the remaining interviews.

The interview started by gathering data on the parents' gender, race, marital status, age, city of residency, and occupation, as well as ages and gender of their children between 11–18 years old. Parents then were asked questions regarding knowledge of vaccinations in general, knowledge and attitudes regarding the HPV vaccination, physician recommendation of the HPV vaccine, discussions of the HPV vaccine with others, sources of health information, and feedback on three HPV education brochures (Table 1). These educational materials were chosen for their focus on parent education about the HPV vaccine. Material #1, titled *HPV, Also Known as Human Papillomavirus*, is a one-page (two-sided) handout by

CDC [22]. Material #2, titled *Girls, Boys and the HPV Vaccine -- Information for Parents*, is an accordion-fold brochure produced by Channing-Bete [23], a national health education publisher. Material #3, titled *At Least 50% of People Will Get HPV at Some Point in their Lives: Most Won't Know They Have It*, is a 32-page booklet by CDC [24] designed to educate Filipino Americans on HPV.

All interviews were conducted by the principal investigator and averaged 29 minutes (range 15–60 minutes). Interviews were digitally recorded, transcribed verbatim and coded by a team of two researchers who were trained in content analysis. Content analysis is a systematic and objective way to quantify qualitative data [25]. Researchers in this study chose to use inductive content analysis to help develop and organize codes, themes, and categories.

Transcripts were read multiple times, with notes kept in the margins to assist in theme development. Once themes were developed, staff consolidated similar themes. After themes were agreed upon, a spreadsheet was created to capture line-by-line coding on all 20 interviews. The objective of this process was to place each statement into a theme as a way of quantifying each theme. There was disagreement between the reviewers on less than 1% of the codes. On codes with no concordance, staff members discussed and determined together which code would be used.

## Results

Thematic saturation was reached after 20 parent interviews. The first eight parents were known to the first author (MRDC), and they identified four other parents who agreed. Six interviewed parents were respondents to recruitment messages through a university listserv and community church, and they identified more parents who agreed to participate. Although either parent was eligible, all participants were women (Table 2), as they were identified as the parent responsible for their child's immunization visits. Of the participants, five were Native Hawaiian, four were Filipino, five were Japanese, and six were Caucasian; these are Hawai'i's four largest ethnic groups [26]. Ages of the mothers ranged from 39 to 60, and 18 of the 20 participants were married. Regarding HPV vaccination, seven participants had children that were fully vaccinated, seven had children that were not vaccinated, and six had children who had received one or two of the required three shots (partially vaccinated). The vaccination status of children was reported by the parent.

The participants had a total of 30 children between the ages of 11 and 18 years old (Table 3). Of the 30 children, 40% were female and 60% were male. Of the 12 daughters, 50% were vaccinated with the HPV vaccine, 25% were not, and 25% had one or two doses of the vaccine. Of the 18 sons, 22% were vaccinated, 50% were not, and 28% were partially vaccinated. In total, 33% of the children were vaccinated, 27% were partially vaccinated, and 40% were not.

Four major themes emerged in this study: (1) the physician is critical in the decision to vaccinate; (2) parental perception of the child's sexual activity guides the timing of their willingness to vaccinate; (3) HPV health education materials should be provided and

discussed by the physician; and (4) parents would prefer an educational brochure that features local faces and testimonials, includes an immunization chart, and addresses barriers to vaccination.

### **The physician is critical in the decision to vaccinate**

The participants relied heavily on the physician's recommendation of the vaccine. Ten participants (50%) stated they had a general knowledge of when to vaccinate their child from their doctor, and 14 (70%) said they learned about the HPV vaccine from the doctor. A mother shared that her daughter's obstetrician-gynecologist (Ob-Gyn) first talked with her about HPV, which subsequently led to a discussion about the vaccine:

"...I only found out (about) HPV because the doctor had said, '(participant's name) do you know what HPV is?' I said, 'No, what is that?' So (she) start(ed) talking to me about it."

Four of the seven participants who had not vaccinated their children noted the lack of a physician recommendation to vaccinate. As one mother said:

"...I don't know, isn't he (the doctor) supposed to know something about it?"

She assumed that all three of her children had been vaccinated with the HPV vaccine, but what she learned about the HPV vaccine during the interview, made her realize that the doctor had not mentioned the vaccine, and her children were not vaccinated. Another mother, with an unvaccinated 18 year-old son and an unvaccinated 12 year-old daughter said:

"I actually talked to (daughter's) pediatrician during her last visit, I brought it up and asked him about it and he said, 'um, [he] wouldn't recommend it yet, um, that we would talk about it in the future."

Another mother was confused because of differing HPV vaccine recommendations from the physician for her two sons ages 12 and 14 years old:

"When I went, (the doctor) told me, 'Oh, it's not required,' so it's up to me. When my husband took my other son, it was more like...she was urging (him), 'You should have the vaccination.' So I was confused 'cause she didn't seem that way with me. So...I just didn't (vaccinate)."

Half of the participants expressed that having their child vaccinated at the recommended age (11–12 years old) was also dependent on the physician's recommendation. Ten participants stated that the physician recommended the vaccine at the appropriate age; 5 mothers vaccinated their child at that time, while others waited. However, one mother who waited explained that the doctor did not tell her that early vaccination was better for the child:

"I used, more or less, what I felt was an appropriate age versus what the pediatrician recommended. So, I think when (she) was 11 years old, the pediatrician had already recommended for her to be vaccinated, but I didn't vaccinate her until her 16th birthday... He's such a good doctor, but he's so careful about what the parents think. And so, you know it was kinda interesting 'cause when I said, 'No.' He never even asked me like, 'OK, you sure you don't want to do

it now? 'Cause these are the advantages to doing it now,' or 'This is why we recommend.' I mean, if he had said that to me, I probably would have thought twice at that time. But he didn't, so when I just said, 'No, I think she's too young.' He said, 'Oh, OK, OK, maybe next year.' But then he stopped."

Seven participants received the HPV vaccine recommendation from the physician after the recommended age period. Five mothers received the recommendation when their child was 14, and one received it when her child was 15. Of these seven participants that received the recommendation late, four vaccinated their children at that time, and three did not.

### **Parental perception of the child's sexual activity guides the timing of their willingness to vaccinate**

Despite a physician's recommendation, several participants delayed vaccinating their children until they were "ready." For example, six participants delayed vaccination because their child "was not sexually active." A mother with two unvaccinated sons explained:

"I'm planning on vaccinating them but maybe I think like a lot of other parents that I'm seeing, 'Well, it's kinda early. I don't think they're sexually active... ' So that's why I didn't, but I know that probably...now they're headed into their teenage years, it's something that I need to reconsider more you know?"

Another mother with an unvaccinated 12-year-old son had similar feelings:

"And for him, he's not somebody that would need it, like, right now. He's not one of those, you know, those kind of teenagers (laughing)...I figure I had some time to talk to him about it, think about it, and you know he can always get it the next time."

Four other participants said that knowing that their child might be sexually active increased their willingness to vaccinate their child with the HPV vaccine. A mother with a 15-year-old daughter said, "I thought that was something that she should, that I should have her do...she has a boyfriend." A mother with a 14-year-old son said, "You know, he's just now starting to like girls and I'm like, 'This is...right.' So by the end of the year...when he goes for his physical...he will get vaccinated." Another participant with a 14-year-old daughter expressed an increased interest in the vaccine "Now that she's 14, so she's getting closer to a time period when she might be sexually active and I might not know about it (laughing). Let's hope not, but who knows."

### **HPV health education materials should be provided and discussed by the physician**

Although participants said they received general health information from various sources (the Internet, family and friends, and the media), 18 mothers reported that their main source of health information was from the physician or the clinic. All 20 participants said they had received paper-based information from the doctor for their child on various topics, including diet, vaccines, developmental milestones, and other medical topics. All but one mother admitted to reading or at least skimming the handouts the physician offered. One mother said:

“I mean, she gave me the pamphlets and paperwork, but most of the time I wouldn’t have read it. The first initial conversation has to be with the doctor. Yeah, because then it opens my understanding of what I’m going to be reading right now, right? So if she gave this (brochure) to me and said, ‘OK, I’m going to give you 10 minutes to read about it. ‘I’d be like, ‘OK, this is what I’m looking for. I’m set up. ”

Specific to the HPV vaccine, 13 participants recalled the physician providing a handout with a recommendation to vaccinate. One mother, who was unsure about the HPV vaccine said: “She talked to me about it and gave me a pamphlet to read up some more. So I did and I went online. I did my homework.” She reported further discussing the vaccine with her spouse, and they decided together to vaccinate their 18-year-old son and 17-year-old daughter.

### **Parents would prefer an educational brochure that feature local faces and testimonials, include an immunization chart, and address barriers to vaccination**

Participants were asked to review and provide feedback on three HPV education materials that are available nationally and produced by established sources, Centers for Disease Control and Prevention and Channing-Bete. When asked which material would most help them decide on vaccinating their child with the HPV vaccine, Materials #1 and #3 (both from the CDC) were picked equally by five mothers, while Material #2 (from Channing-Bete) was selected by ten mothers. All participants believed that one or more of the brochures was informative; however 18 mothers favored the format of Material #2 due to its bulleted points, segmentation of pages, and vivid colors.

Five participants specifically wanted to see a brochure made specifically for Hawai‘i. For example, in reaction to Material #3, which targets Filipinos, the four Filipino participants said that the people in the brochure looked Filipino but clearly did not live in Hawai‘i because they were wearing jackets. Another mother, reacting to Material #2, liked that the cover showed girls and boys of different ethnicities, but also said:

“I don’t care for these pictures...They don’t look like our local (population)...Like, this looks so, Mainland. I didn’t care, maybe there’s something. Maybe I want more flavor of Hawai‘i, you know, with little ti leaf or little bit more pictures, yeah. More with the local kids.”

Each material had unique features that participants found attractive. For example, Material #1 featured a testimony from a cervical cancer survivor that ten participants liked, as illustrated by this comment: “It has facts and information, but then also the personal connection of this specific person’s story which...is effective.” Material #2 featured an immunization table that indicated which shots should be given at which ages, and 18 of the 20 participants commented favorably on this chart. One mother said that, because of the chart, she would keep this brochure a lot longer than the others.

Finally, parents liked the small paragraphs of information that addressed barriers and answered questions about the HPV vaccine. For example, Material #1 featured frequently asked questions like “Is the vaccine safe?” and “Why does my child need this now?” A mother of a vaccinated daughter stated that she noticed that the material indicated that the



HPV vaccine has mild side effects and found that comforting, “That’s one of the first things I look at is what are the side effects?” A mother of a son who received only two doses of the HPV vaccine pointed out that Material #2 was much more informative because it included a reminder to receive the second and third shots on time, “(The) doctor told me that it was OK...(because) I forgot about the third one and so he’s (son) getting his third one in January.”

## Discussion

This study yielded four major themes. First, the physician’s recommendation to vaccinate and willingness to educate parents about the vaccine are very important to a parent’s decision-making process. Second, the parent’s perception of their child’s sexual activity guided their willingness to vaccinate. Third, parents appreciate health education materials from the physician and felt that HPV vaccine materials should be provided and discussed by the physician. Lastly, Hawai’i parents would prefer an educational brochure that featured local faces and testimonials, included an immunization chart, and addressed barriers to vaccination.

Findings from this study reinforce previous research on the importance of the physician in promoting the HPV vaccine [7, 12]. Physicians need to make a strong case for the vaccine [27] and should emphasize its increased effectiveness when administered at ages 11 or 12. Several researchers feel that more physicians training on the HPV vaccine will increase uptake [28–30]. Physician education should include the ACIP recommendation on timing of vaccine administration (age of 11 or 12), reasons for this timing, suggestions on how to discuss the HPV vaccine with parents, why a strong recommendation is important, and how health education materials on the vaccine can help reinforce their recommendation, especially when the materials are specifically targeted toward the population of interest.

Timely information should be given to parents so that they have a better understanding of the need for on- time vaccination and to reduce its stigma as a sexually transmitted infection [31]. This would be most helpful to parents who underestimate or are unsure of their child’s current sexual activities or interest in sexual experiences in the near future [29]. A discussion on timing of the HPV vaccine should be clearly emphasized in spite of the parent’s perception of their child’s sexual activity.

Parents welcomed health education materials on the HPV vaccine, and many preferred to receive them from a physician. Both of these findings are supported by previous research [14, 28]. Also, findings from mothers in this study can guide the development of a brochure for Hawai’i’s multicultural population. Elements from other brochures that were particularly attractive were bulleted points, pictures, testimonials, vivid colors, and an immunization chart. Also, as reflected in other studies, parents wanted a brochure tailored to the local population, reflecting local faces in the photos and voices in the testimonials [32–33]. This brochure can supplement a physician’s recommendation and address HPV knowledge barriers.



## Limitations

This study has several limitations. The sample included only 20 parents. However, thematic saturation was achieved, and the sample had almost equal representation by the four largest ethnic groups in Hawai'i. Another limitation is that the participants were all mothers. However, this reflects that female caregivers most often hold the primary responsibility for the child's health decisions [34]. Finally, mothers reported vaccination experiences of multiple children, occurring at different points in time, thus recall bias is a threat to the validity of the findings.

## Conclusion

This study confirmed that a physician plays a critical role in HPV vaccination uptake. Seventy percent of mothers stated they had learned about the HPV vaccine from their physician and this reinforced the findings of numerous studies on the importance of a physician's strong recommendation to increase HPV vaccine uptake. This study also suggested that an educational brochure on the HPV vaccine could help stimulate and supplement the discussion established in the clinical encounter. It is also important for educational materials about the HPV vaccine to be culturally targeted to the needs of minority populations, particularly those in Hawai'i.

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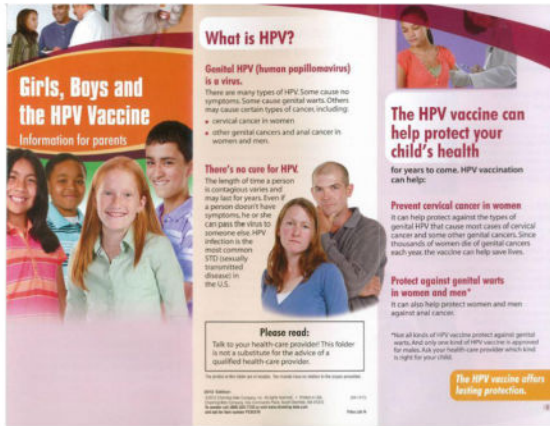
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## Appendix: National HPV vaccine education materials critiqued by participants

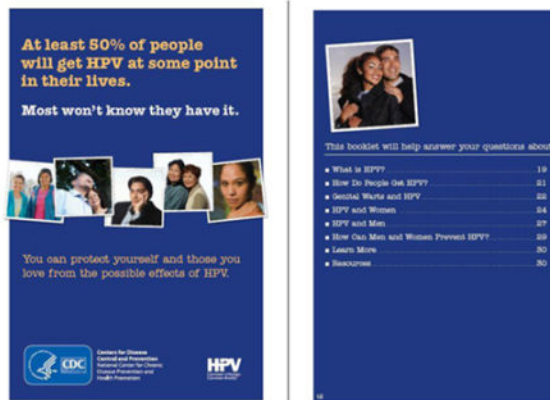
Material #1: CDC flyer (CDC, 2013)



Material #2: Channing-Bete brochure (Channing-Bete, 2013)



Material #3: CDC booklet (CDC, 2013)



**Table 1**

Interview questions and measures

| Category  | Question  |
|---|---|
| Child's Vaccination History                                 |   |
| Vaccination Schedule  | <ul style="list-style-type: none"> <li>• How did you know when to vaccinate your child?</li> <li>• How do you know that your child received all his/her vaccines?</li> </ul>  |
| HPV Knowledge & Status                                      |   |
| HPV Knowledge   | <ul style="list-style-type: none"> <li>• How did you hear about the HPV vaccine?</li> <li>• What would you say to your friend if she asked, "What is the HPV vaccine and who is it for?"</li> </ul>   |
| Child HPV vaccine status                                    | <ul style="list-style-type: none"> <li>• Are your children ages 11–18 vaccinate with the HPV vaccine?</li> <li>• At what age did he/she get vaccinated?</li> <li>• Did he/she get all 3 shots?</li> </ul>   |
| Physician Recommendation                                    |   |
| Discussion with the physician about the HPV vaccine         | <ul style="list-style-type: none"> <li>• How did you hear about the HPV vaccine?</li> <li>• When did the doctor mention the vaccine?</li> <li>• What did the doctor say about the vaccine?</li> <li>• What questions did you ask your doctor regarding the vaccine?</li> <li>• How old was your child when the doctor mentioned the vaccine?</li> </ul> |
| HPV vaccine recommendation                                  | <ul style="list-style-type: none"> <li>• Did your doctor recommend the HPV vaccine for your child?</li> </ul>   |
| Motivators & Barriers to Vaccinating Child with HPV Vaccine |   |
| Vaccinating child(ren) with HPV vaccine                     | May I ask why you chose to vaccinate your child with the HPV vaccine?   |
| Not vaccinating child(ren) with HPV vaccine                 | May I ask why you chose not to vaccinate your child with the HPV vaccine?   |

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**Table 2**

Characteristics of the interview sample

| <b>Parents (N=20)</b>                 |       |                              |    |
|---------------------------------------|-------|------------------------------|----|
| <b>Gender</b>                         |       |                              |    |
| Female                                | 20    | (100%)                       |    |
| Male                                  | 0     | (0%)                         |    |
| <b>Ethnicity</b>                      |       |                              |    |
| Native Hawaiian                       | 5     | (25%)                        |    |
| Filipino                              | 4     | (20%)                        |    |
| Japanese                              | 5     | (25%)                        |    |
| Caucasian                             | 6     | (30%)                        |    |
| Age range (years)                     | 39–60 |                              |    |
| <b>Marital Status</b>                 |       |                              |    |
| Married                               | 18    | (90%)                        |    |
| Divorced                              | 2     | (10%)                        |    |
| <b>Number of children</b>             |       |                              |    |
| 1                                     | 5     | (25%)                        |    |
| 2                                     | 8     | (40%)                        |    |
| 3                                     | 4     | (20%)                        |    |
| 4                                     | 2     | (10%)                        |    |
| 6                                     | 1     | (5%)                         |    |
| <b>HPV vaccine status (by parent)</b> |       | <b>Physician recommended</b> |    |
| Total                                 |       | Yes                          | No |
| Vaccinated                            | 6     | 6                            | 0  |
| Unvaccinated                          | 7     | 4                            | 3  |
| Partially vaccinated                  | 7     | 6                            | 1  |

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**Table 3**

Vaccination status of children of parents interviewed (N=30)

| Gender | Vaccinated | Unvaccinated | Partial | Total    |
|--------|------------|--------------|---------|----------|
| Female | 6          | 3            | 3       | 12 (40%) |
| Male   | 4          | 9            | 5       | 18 (60%) |
| Total  | 10 (33%)   | 12 (40%)     | 8 (27%) | 30       |

| Age (years) | Vaccinated | Unvaccinated | Partial | Total |
|-------------|------------|--------------|---------|-------|
| 11          | 0          | 1            | 0       | 1     |
| 12          | 1          | 3            | 1       | 5     |
| 13          | 4          | 1            | 0       | 5     |
| 14          | 1          | 2            | 3       | 6     |
| 15          | 1          | 1            | 2       | 4     |
| 16          | 2          | 1            | 0       | 3     |
| 17          | 1          | 1            | 1       | 3     |
| 18          | 0          | 2            | 1       | 3     |
| Total       | 10 (33%)   | 12 (40%)     | 8 (27%) | 30    |

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