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# Addressing Cervical Cancer in Central Appalachia

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# Addressing Cervical Cancer in Central Appalachia

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## ABSTRACT

Rural women, particularly those residing in central Appalachia, have some of the nation's highest cervical cancer mortality rates. With support from a federal (U.S. Centers for Disease Control and Prevention) and private (Merck) grant, the University of Kentucky Center for Excellence in Rural Health-Hazard is attempting to address this issue. Two Eastern Kentucky-based researchers have surveyed 350 18- to 26-year-old female community health center patients and college students about their risk factors for the disease. The young women are then offered free Gardasil, a vaccine against the virus that causes most cervical cancer cases. The purpose of this project is to determine the prevalence of Quadrivalent Human Papillomavirus Recombinant Vaccine acceptance among traditional university-age women and to identify non-cost, psychosocial factors associated with acceptance.

## METHODS

**Procedures:** Gardasil was provided at no cost. To avoid self-selection bias in the sample, the project was called the Women's Health Study and reference to free Gardasil was avoided entirely.

**Compensation:** After providing consent, women completed a self-administered questionnaire that assessed numerous psychosocial factors potentially related to Gardasil acceptance. Subsequently, women were compensated with \$25 for their time.

## Measures:

■ Three items were assessed using "ever" as the recall period: ever having an abnormal Pap test result, an STD, or having a friend/family diagnosed with cervical cancer.

■ One item asked, "How often do you worry that you might have HPV?" Response options were provided on a 4-point scale ranging from "never" to "frequently."

■ Three items assessed normative influences. The first asked, "Do you think your friends would want you to be vaccinated against HPV?" Two subsequent items replaced the word "friends" with "mother" and then with "father."

■ A series of statements were provided to women, with each statement reflecting a factor potentially associated with vaccine acceptance. Response options were provided on a 5-point scale ranging from (1) "strongly agree" to (5) "strongly disagree."

**Analysis:** Because the study is on-going, many women receiving dose 1 have not yet been due for dose 2 or dose 3. Thus, this preliminary analysis only compared women receiving dose 1 to those declining dose 1. Associations between continuous correlates and HPV vaccine acceptance were assessed by independent group t-tests. Associations between dichotomous correlates and HPV vaccine acceptance were assessed by the use of contingency table analyses to calculate prevalence ratios, their 95% confidence intervals, and their respective p values. Correlates achieving significance were entered into a multiple logistic regression model using forward stepwise entry. Multivariate significance was defined by an alpha level of .05 or less.

## FINDINGS

■ Average age of the sample was 21.3 years (standard deviation = 2.5 years). The vast majority (98.6 percent) self-identified as "Caucasian/white," with the remainder identifying as members of other racial/ethnic backgrounds. Most (83.7 percent) reported having penile-vaginal sex in the past 12 months.

■ One hundred and two women received their first dose of Gardasil, leaving 248 (70.9 percent) who had not accepted the offer of free vaccination.

■ The mean age of women receiving the vaccine (21.5 years) was not significantly different than the mean age of those not accepting the vaccine (21.3 years) ( $t = .88$ ;  $df = 348$ ;  $p = .38$ ).

■ Among participants who answered "yes" to having had an abnormal pap smear, 40.7 percent received dose 1 of Gardasil. For participants who answered "no," only 25.1 percent accepted the free vaccine. ( $p = .005$ )

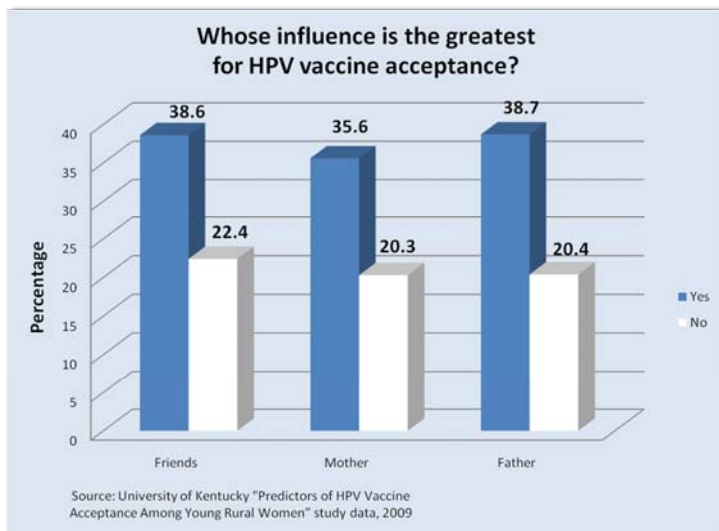
**Figure 1** relates participants' responses about whether friends or family members would "definitely want me to be vaccinated" to their subsequent decision about whether to accept a free dose of Gardasil. For instance, among participants answering "yes" with regard to their father, 38.7 percent received dose 1 of Gardasil; among those answering "no," only 20.4 percent accepted the vaccine.

**Table 1** presents statistically significant ( $p < .05$ ) attitudinal differences between study participants who accepted dose 1 and those who did not. Answers to health belief questions were on a 5-point scale ranging from (1) "strongly agree" to (5) "strongly disagree."

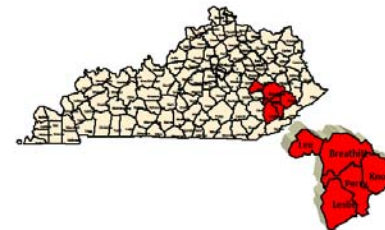
**Table 2** shows factors that might have made a practical difference in participants' decision about whether to accept the vaccine. However, none of these predictors were impactful to a statistically significant degree ( $p < .05$ ).

**Table 3** shows the results of a multivariate analysis. Only four predictor variables retained significance.

**Figure 1**



**Project service area**



**Table 2**

Statistically insignificant predictors of HPV vaccine acceptance	
Afraid of needles	$p = .75$
May cause side effects	$p = .63$
I avoid medical care	$p = .07$
Wouldn't want sexual history taken	$p = .16$
Wouldn't get 3 doses	$p = .51$
Had sex in the past 12 months	$p = .61$
Ever had an STD	$p = .72$
Friend or family had cervical cancer	$p = .62$
Never worry about HPV	$p = .07$

Source: University of Kentucky "Predictors of HPV Vaccine Acceptance Among Young Rural Women" study data, 2009

**Table 1**

**Statistically significant differences between those who accepted the HPV vaccine and those who did not**

Variable	Mean for those getting dose #1	Mean for those not getting dose #1	Probability
HPV is serious enough to justify getting the vaccine	1.63	1.90	$p = .002$
I am not sure the vaccine is safe	3.47	2.96	$p = .0001$
In general, vaccines are a good thing	1.69	1.91	$p = .015$
I would not take the time to return to the clinic for booster doses	4.21	3.89	$p = .001$
I would not get booster doses if excessive waiting room time was involved	3.74	3.38	$p = .002$

Note: Results are based on participant responses on a 5-point scale ranging from (1) "strongly agree" to (5) "strongly disagree." For all results, a lower mean score corresponds with greater participant agreement.  
 Source: University of Kentucky "Predictors of HPV Vaccine Acceptance Among Young Rural Women" study data, 2009

**Table 3**

Multivariate Analysis				
	Adjusted Odds Ratio	Confidence Interval	Significance	Remarks
Never had an abnormal Pap	1.98	95% CI = 1.15 – 3.38	$p = .013$	About twice as likely to decline if they never had an abnormal Pap
Did not indicate that "Father" would definitely want me to be vaccinated	1.76	95% CI = 1.05 – 2.92	$p = .03$	About 1.8 times more likely to decline free Gardasil
I could not easily return to the clinic for boosters	1.66	95% CI = 1.12 – 2.44	$p = .01$	12% greater odds of decline for each unit of more agreement with this statement
Less agreement with the statement that the vaccine is not safe	.65	95% CI = .59 – .85	$p = .002$	This is a protective effect meaning that for each unit of "less agreement" on the 5-point scale young women were 35% less likely to decline the free offer of Gardasil

Source: University of Kentucky "Predictors of HPV Vaccine Acceptance Among Young Rural Women" study data, 2009

## CONCLUSIONS

1. Even when we offered Gardasil for free the uptake was poor. Social marketing programs are needed to promote increased uptake among young rural women (and someday soon, young rural men).
2. Findings also suggest that daughters' perceptions of their fathers' endorsement of HPV vaccination may be critical to acceptance – more so than mother's or friends' endorsement.
3. The experience of having an abnormal Pap test result may be a "window of opportunity" for providers to offer Gardasil.
4. Vaccine safety and ease of return for boosters are critical perceptions – each can potentially be altered by social marketing programs.