

# 中山醫學大學 101 學年度博士班入學招生考試試題

## 公共衛生學系博士班

考試科目：生物統計與流行病學

時間：120 分鐘

※請注意本試題共( 5 )張，如發現頁數不足，應當場請求補齊，否則缺頁部份概以零分計算。第 ( 1 ) 頁

本試題共二大題，總分 100 分，可使用計算機。

請閱讀下列文章後回答 (Vaccine 29:4238, 2011)。

### Knowledge and intention to participate in cervical cancer screening after the human papillomavirus vaccine

Rebecca Anhang Price<sup>a,\*</sup>, Jill Koshiol<sup>b</sup>, Sarah Kobrin<sup>c</sup>, Jasmin A. Tiro<sup>d</sup>

#### A B S T R A C T

**Background:** If women who receive the human papillomavirus (HPV) vaccine are unduly reassured about the cancer prevention benefits of vaccination, they may choose not to participate in screening, thereby increasing their risk for cervical cancer. This study assesses adult women's knowledge of the need to continue cervical cancer screening after HPV vaccination, describes Pap test intentions of vaccinated young adult women, and evaluates whether knowledge and intentions differ across groups at greatest risk for cervical cancer.

**Methods:** Data were from the 2008 Health Information National Trends Survey (HINTS) and the 2008 National Health Interview Survey (NHIS), which initiated data collection approximately 18 months after the first FDA approval of an HPV vaccine. We calculated associations between independent variables and the outcomes using chi-square tests.

**Results:** Of 1586 female HINTS respondents ages 18 through 74, 95.6% knew that HPV-vaccinated women should continue to receive Pap tests. This knowledge did not vary significantly by race/ethnicity, education, income, or healthcare access. Among 1101 female NHIS respondents ages 18–26 who had ever received a Pap test, the proportion (12.7%;  $n = 139$ ) who reported receipt of the HPV vaccine were more likely than those not vaccinated to plan to receive a Pap test within three years (98.1% vs. 92.5%,  $p < 0.001$ ).

**Conclusions:** US adult women possess high knowledge and intention to participate in Pap testing after HPV vaccination. The vast majority of young adult women who received the HPV vaccine within its first two years on the market intend to participate in cervical cancer screening in the near future. Future studies are needed to examine whether those vaccinated in adolescence will become aware of, and adhere to, screening guidelines as they become eligible.

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**Table 1**  
Survey samples and outcomes.

	Health Information National Trends Survey (HINTS), 2008	National Health Interview Survey (NHIS), 2008
Sample under study	Female respondents age 18–75 who had heard of HPV (n = 1586)	Female respondents age 18–26 who had never had a hysterectomy, ever had a Pap test and had received at least one dose of the HPV vaccine (n = 139)
Mode of administration	Telephone	In person
Outcome of interest	“Do you think women who get the cervical cancer vaccine or HPV shot should continue to get screened for cervical cancer with the Pap test?”	“When do you expect to have your next Pap smear or test?”

**Table 2**  
Descriptive characteristics, belief that women should receive Pap tests after HPV vaccine, HINTS 2008<sup>a,b</sup>.

Respondent characteristic	Women ages 18–75 Weighted % (95% confidence interval)	Think that women who get the HPV vaccine should continue to receive Pap tests Weighted % (95% confidence interval)	p
All (n = 1586)		95.55 (94.5, 96.6)	
<b>Sociodemographics</b>			
Age group (years; n = 1586)			0.07
18–29	24.6 (22.8, 26.4)	95.9 (90.3, 98.3)	
30–64	67.0 (65.2, 68.7)	95.9 (93.8, 97.3)	
65–75	8.4 (7.8, 9.1)	92.3 (89.1, 94.6)	
Race/ethnicity (n = 1540)			0.08
Non-Hispanic White	72.0 (69.8, 74.2)	95.8 (94.1, 97.0)	
Non-Hispanic Black	12.8 (10.5, 15.4)	96.4 (88.0, 99.0)	
Hispanic	9.5 (8.0, 11.4)	94.5 (83.0, 98.4)	
Other/multiple ethnicity	5.7 (4.3, 7.4)	93.2 (76.1, 98.4)	
Education (n = 1559)			0.81
Less than high school	8.3 (6.9, 10.0)	93.3 (78.8, 98.1)	
High school graduate	26.0 (24.1, 28.1)	96.6 (92.1, 98.5)	
Some college or vocational school	36.8 (34.9, 38.7)	95.5 (92.2, 97.4)	
College graduate or more	28.9 (27.6, 30.3)	95.8 (93.4, 97.4)	
Income (n = 1304)			0.97
<\$15,000	8.4 (6.7, 10.5)	96.4 (90.5, 98.7)	
\$15,000–\$49,999	37.9 (34.6, 41.4)	96.2 (93.1, 97.9)	
>\$50,000	53.7 (51.1, 56.3)	96.5 (94.4, 97.9)	
<b>Health care access</b>			
Health insurance (n = 1582)			0.81
Yes	87.2 (84.7, 89.3)	95.6 (94.0, 96.9)	
No	12.8 (10.7, 15.4)	95.0 (84.6, 98.5)	
Usual health care provider (n = 1583)			0.19
Yes	79.3 (75.6, 82.6)	96.1 (94.4, 97.3)	
No	20.7 (17.4, 24.5)	93.6 (87.6, 96.8)	
<b>Cervical cancer screening history</b>			
Time since last Pap test (n = 1548)			0.02
Within the past year	73.6 (70.7, 76.2)	96.5 (94.8, 97.7)	
1–3 years ago	15.4 (13.4, 17.5)	96.9 (91.7, 98.9)	
More than 3 years ago	11.1 (9.4, 13.0)	90.0 (82.4, 94.5)	
Last Pap was due to abnormality (n = 1556)			0.15
Yes	5.4 (4.1, 7.1)	91.7 (77.9, 97.2)	
No	94.6 (92.9, 95.9)	96.1 (94.7, 97.1)	
Ever had HPV infection (n = 1578)			-
Yes	4.6 (3.3, 6.5)	100.0 (-)	
No	95.4 (93.5, 96.7)	95.3 (93.4, 96.7)	

<sup>a</sup> Health Information National Trends Survey.

<sup>b</sup> Among respondents who had heard of HPV prior to the survey.

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### 3. Results

#### 3.1. Knowledge of cervical cancer screening requirements

In the HINTS sample of 1586 women ages 18 through 74 who 150 had heard of HPV and had no history of cervical cancer, 95.6% of 151 respondents knew that women who receive the HPV vaccine should 152 continue to receive Pap tests (Table 2). This high level of knowledge did not vary significantly by race or ethnicity, education, income, health insurance, presence of a usual health care provider, or previous cancer diagnosis. Women who had a history of HPV infection or had a Pap test in the previous three years were slightly more likely to know about the continuing need for Pap tests than those who had not ( $p < 0.01$ ), although for all subgroups knowledge was 90% or greater.

Table 3  
Descriptive characteristics and intention to receive a Pap test in the next three years among HPV-vaccinated women who have ever had a Pap test: NHIS 2008<sup>a</sup>.

Respondent characteristic	HPV-vaccinated women ages 18-26 weighted % (95% confidence interval)	Intends to receive a Pap test in the next three years weighted % (95% confidence interval)	p
All (n = 139)	-	98.1 (94.5, 99.4)	-
<b>Sociodemographics</b>			
Race/ethnicity (n = 139)			0.29
Non-Hispanic White	75.9 (67.5, 82.6)	98.4 (93.0, 99.6)	
Non-Hispanic Black	10.0 (5.7, 17.1)	100.0 (-)	
Hispanic	10.8 (6.2, 17.9)	100.0 (-)	
Other/multiple ethnicity	3.4 (1.6, 7.1)	81.1 (49.4, 95.0)	
Education (n = 139)			0.54
Less than high school	5.5 (2.7, 10.9)	100.0 (-)	
High school graduate	20.4 (13.3, 30.0)	98.3 (88.3, 99.8)	
Some college	62.4 (53.2, 70.9)	98.0 (91.7, 99.5)	
College graduate or more	11.7 (7.4, 18.0)	97.5 (84.8, 99.6)	
Family income as % of federal poverty line (n = 135)			0.22
200%+	57.7 (47.2, 67.6)	97.4 (90.9, 99.3)	
100% < 200%	19.3 (12.3, 29.0)	100.0 (-)	
<100%	23.0 (15.8, 32.3)	98.2 (88.6, 99.7)	
Immigration status (n = 139)			0.38
Born in U.S. (excluding territories)	97.9 (94.7, 99.2)	98.1 (94.4, 99.3)	
In U.S. 10+ years	1.2 (0.4, 4.0)	100.0 (-)	
In U.S. <10 years	0.9 (0.2, 4.0)	100.0 (-)	
<b>Health care access</b>			
Health insurance (n = 137)			0.16
Yes	95.6 (89.4, 98.2)	98.0 (94.2, 99.3)	
No	4.4 (1.8, 10.6)	100.0 (-)	
Usual source of care (n = 139)			0.10
Yes (excludes emergency room)	89.8 (82.8, 94.1)	97.9 (93.9, 99.3)	
No	10.2 (5.9, 17.2)	100.0 (-)	
<b>Cervical cancer screening history</b>			
Time since last Pap test (n = 139)			0.10
1 year ago or less	85.3 (75.8, 91.5)	97.8 (93.6, 99.2)	
1-3 years ago	14.7 (8.5, 24.2)	100.0 (-)	
Ever had abnormal Pap test (n = 139)			0.08
Yes	28.2 (21.4, 36.2)	100.0 (-)	
No	71.8 (63.8, 78.6)	97.4 (92.4, 99.1)	
Ever told you have HPV (n = 133)			0.09
Yes	13.8 (8.4, 21.9)	100.0 (-)	
No	86.2 (78.1, 91.6)	97.7 (93.4, 99.2)	

<sup>a</sup> National Health Interview Survey.

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### 3.2. *Intention to participate in cervical cancer screening*

In the NHIS sample of women ages 18 through 26 who had ever had a Pap test and had never had a hysterectomy ( $n = 1101$ ), the 12.7% of women ( $n = 139$ ) who had received the HPV vaccine by the end of 2008 were significantly more likely to intend to receive a Pap test in the next three years than unvaccinated women (98.1% versus 92.7%,  $p < 0.001$ ). Among unvaccinated women, higher education, doctor visit within the past year, Pap test in the past year, and history of an abnormal Pap or positive HPV test were all positively associated with intention to have a Pap test in the next three years ( $p < 0.05$ ; data not shown).

Among women who had received the HPV vaccine, intention to receive a Pap test in the next three years did not vary by race/ethnicity, education, income, immigration status, or health insurance (Table 3). Having a usual source of health care, a Pap test one to three years ago, and history of an abnormal Pap test or positive HPV test were marginally associated with higher intention to participate in Pap testing in the next three years ( $p < 0.10$ ).

#### 一、問答、計算題 (50%)

1. 請說明此研究的研究目標是什麼？(10%)
2. 請問此研究的流行病學研究設計是什麼？(10%)
3. 請問研究對象如何選擇？研究對象是否適合研究目的？(10%)
4. 請問研究中的自變項(independent variables)與依變項(outcome variables)是什麼？(10%)
5. 請問研究中的統計方法是什麼？並請說明"Table 2 Health care access 中 Health insurance"的  $p=0.81$  如何獲得？(10%)

#### 二、申論題 (50%)

1. 請問作者對於研究結果的說明是否適當？如果你是此研究的作者，請嘗試說明研究結果。(15%)
2. 假設你是研究人員，請問研究中可能的研究限制與偏差有哪些？(20%)
3. 根據文章資料，請問有哪些是不適當的說明或錯誤？(15%)

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### CHI-SQUARED TABLE

Critical values

df	p value											
	0.25	0.20	0.15	0.10	0.05	0.025	0.02	0.01	0.005	0.0025	0.001	0.0005
1	1.32	1.64	2.07	2.71	3.84	5.02	5.41	6.63	7.88	9.14	10.83	12.12
2	2.77	3.22	3.79	4.61	5.99	7.38	7.82	9.21	10.60	11.98	13.82	15.20
3	4.11	4.64	5.32	6.25	7.81	9.35	9.84	11.34	12.84	14.32	16.27	17.73
4	5.39	5.99	6.74	7.78	9.49	11.14	11.67	13.23	14.86	16.42	18.47	20.00
5	6.63	7.29	8.12	9.24	11.07	12.83	13.33	15.09	16.75	18.39	20.51	22.11
6	7.84	8.56	9.45	10.64	12.53	14.45	15.03	16.81	18.55	20.25	22.46	24.10
7	9.04	9.80	10.75	12.02	14.07	16.01	16.62	18.48	20.28	22.04	24.32	26.02
8	10.22	11.03	12.03	13.36	15.51	17.53	18.17	20.09	21.95	23.77	26.12	27.87
9	11.39	12.24	13.29	14.68	16.92	19.02	19.63	21.67	23.59	25.46	27.83	29.67
10	12.55	13.44	14.53	15.99	18.31	20.48	21.16	23.21	25.19	27.11	29.59	31.42
11	13.70	14.63	15.77	17.29	19.68	21.92	22.62	24.72	26.76	28.73	31.26	33.14
12	14.85	15.81	16.99	18.55	21.03	23.34	24.05	26.22	28.30	30.32	32.91	34.82
13	15.93	16.93	18.16	19.81	22.36	24.74	25.47	27.69	29.82	31.88	34.53	36.48
14	17.12	18.15	19.4	21.06	23.68	26.12	26.87	29.14	31.32	33.43	36.12	38.11
15	18.25	19.31	20.60	22.31	25.00	27.49	28.26	30.58	32.80	34.95	37.70	39.72