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**Cancer Issues Population  
Survey 2007:  
PapScreen Victoria Component**

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Papscreen

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## ABSTRACT

Cervical cancer is a potentially fatal disease which is associated with the human papilloma virus (HPV). Until recently, the prevention of cervical cancer depended on the use of the Pap test to detect abnormal changes in the cells of the cervix early enough to allow them to be treated appropriately. The development of an HPV vaccine has now provided an additional way of reducing the incidence of cervical cancer. The recommendation in Australia is still that women have a Pap test every two years, regardless of whether they have been vaccinated against HPV.

This paper reports on findings from the cervical screening component of a large telephone survey conducted by CBRC in 2007 which included 1129 women. Women were asked a series of questions about their Pap test behaviour, the risk factors for cervical cancer and knowledge of the HPV vaccine.

Ninety per cent of the women surveyed had had at least one Pap test, and of those 83% said it had been within the last 2 years. About one-quarter of women indicated their doctor had suggested their last Pap test, whereas the others had initiated their own test, either unprompted (36%) or after receiving a reminder letter (37%). Two-thirds of women saw their usual doctor for their Pap test.

Women's knowledge of any factors which can contribute to the risk of cervical cancer was poor, with 46% unable to name any factor and only one in ten mentioning HPV. Awareness of the vaccine was very high (94%), as was awareness that Pap tests were still needed even after vaccination (90% of those who knew of the vaccine). However, they were unsure or incorrect about many of the specific features of the vaccine: only half knew that the vaccine was not effective at preventing cancer in women of any age group; just over half knew the vaccine would not prevent all cervical cancers if given early enough and two-thirds knew the vaccine could not be used as a treatment. Reassuringly, only 5% of women overall said the availability of the vaccine would make them less likely to have a Pap test in future, but this applied to one in ten of the women in the age group 18-26, who are most likely to be vaccinated.

Women's stated awareness that Pap tests are still needed after vaccination is encouraging, however, they do not appear to have a good understanding of the link between HPV and cervical cancer or *how* the vaccination reduces the risk of cervical cancer. PapScreen needs to continue to educate women so that they understand why they still need to have Pap tests.

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## INTRODUCTION

### Background

Cervical cancer is a potentially fatal disease that is mostly preventable if it is detected early enough and then treated appropriately. The Pap test is used internationally as a screening test to detect abnormal changes in the cells of the cervix that may lead to cervical cancer.

In Australia the recommended interval between Pap tests is two years, providing the previous test did not detect any abnormalities. In 2005/06, 63.4% of eligible Victorian women – that is women who were aged 20 to 69 years and who had not had a hysterectomy – had a Pap test (Victorian Cervical Cytology Registry, 2007).

In Victoria, women who have had a Pap test receive one reminder letter from the Victorian Cervical Cytology Registry (VCCR) if they become three months overdue for their next test (that is 27 months after the previous test). Many Pap test practitioners also send out reminder letters to their patients.

In 2006/07 a number of changes occurred to the environment in which cervical screening takes place. In June 2006 a human papilloma virus (HPV) vaccine was approved for use by the Therapeutic Goods Administration, for women aged up to 26. Then late in 2006, the Commonwealth Government announced that an HPV vaccination program would begin in 2007. The vaccination program began in schools in April 2007, with a progressive roll-out that aimed to give all girls the opportunity to be vaccinated before they finished school. In addition, a catch-up program was initiated for young women up to 26 who would not be reached by the school schedule. Until mid-2009, women aged 18 to 26 can access the vaccine free via GPs, though they may have to pay for the consultation.

The vaccination program and the publicity surrounding it brought the issue of HPV on to the public agenda. While supporting the concept of a vaccination program, PapScreen was concerned about the implications for the screening program if women misunderstood some of the complex messages about HPV, the vaccine or cervical cancer. Particular concerns were that women might perceive that the vaccine was able to prevent, or even treat, all cervical cancers, and that Pap tests would no longer be needed.

In 2007, PapScreen took part in an omnibus telephone survey, The Cancer Issues Population Survey (CIPS), conducted by The Centre for Behavioural Research in Cancer (CBRC). A previous omnibus survey had been conducted by CBRC in 2005. The aim of the survey was to collect data relating to beliefs and attitudes about cancer risk, cancer prevention and early detection, and cancer care. In addition to these cancer issues, the survey also assessed public awareness and perceptions of The Cancer Council Victoria and the services it offers.

The 2007 survey also allowed specific programs delivered by the Cancer Council, such as PapScreen Victoria, the opportunity to include questions to assist with planning and evaluation.

Questions contributed by PapScreen covered women's Pap testing behaviour, prompts to having a Pap test, and knowledge about HPV. The PapScreen questions were only asked of women, and in this report only women in the age range of 18-69 years are included, as they are the group of key interest to PapScreen. For this reason, some demographic details described here will differ slightly from those included in other reports about the same survey.

## Aims

The aims of the PSV component of the study were:

- v To determine what prompted women who had undergone a Pap test in the past three years to have the test
- v To examine women's knowledge of the factors which contribute to cervical cancer
- v To determine women's awareness of the human papilloma virus (HPV) vaccine and their knowledge about it.

## METHOD

### Sample

The Social Research Centre conducted this population survey during July and August 2007. On behalf of the Cancer Council, the market research company interviewed a representative sample of 3,000 Victorian men and women aged 18 years and over by telephone. The sample was stratified by Melbourne metropolitan / country Victoria according to the population distribution (approximately 70/30%). The sampling frame for the survey was a mix of randomly selected telephone numbers from the Electronic White Pages and random digit dialling. A generic letter introducing the survey on Social Research Centre letterhead was sent to the households who were macro matched to the randomly selected telephone numbers from the 2004 Electronic White Pages. Up to six calls were made to establish contact, with unlimited further attempts to achieve an interview, where contact had been established. Contact attempts were spread over weekday afternoons (4 pm to 6 pm), early evenings (6 pm to 8.30 pm) and weekends (10 am to 6 pm). No calls were made outside these times, except by prior appointment. When the household was contacted, the person who had their birthday next and was aged 18 years or older was selected for the interview. In order to maximise response, an 1800 number was used throughout the survey period by the market research company to establish survey bona fides, address respondents' queries and encourage response.

### Questionnaire

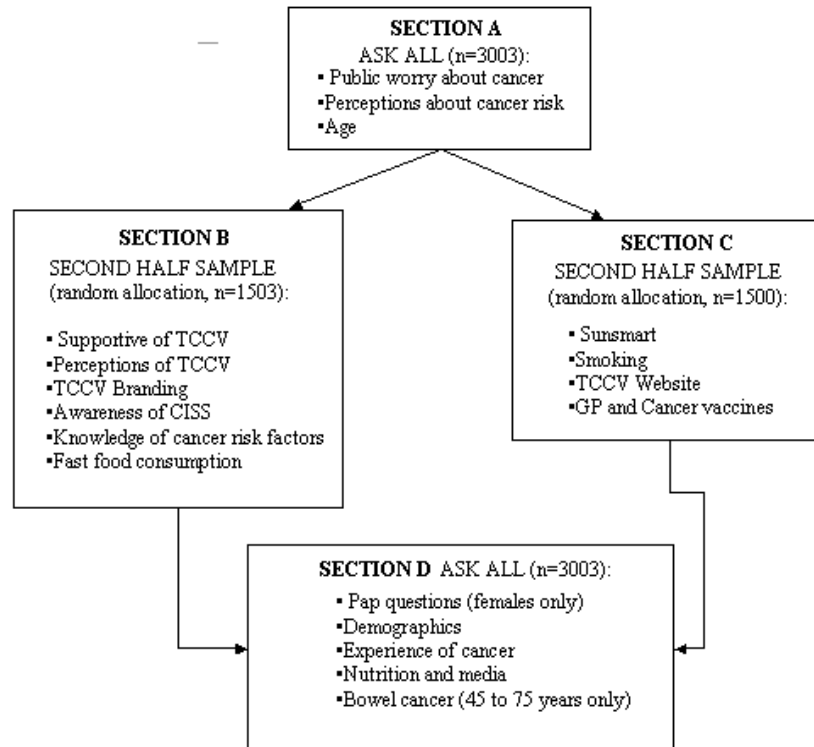
The questionnaire was developed by the Centre for Behavioural Research in Cancer (CBRC) within the Cancer Council. The questionnaire was a multi-purpose survey with questions from the 2005 Cancer Issues Population Survey and other cancer-related population surveys conducted in Australia. The market research company pilot-tested the questionnaire, before a final questionnaire was determined. Some of the issues that were covered in the survey were:

- v public worry about cancer;
- v perceptions about cancer risk and knowledge of cancer risk factors;
- v awareness of cancer information services;
- v knowledge and perceptions of the Cancer Council, including knowledge of the Cancer Council logo and website;
- v SunSmart & Vitamin D attitudes and behaviour;
- v Pap testing attitudes and behaviour;
- v general practitioner attendance;
- v bowel cancer screening attitudes and behaviours;

- v personal and demographic information including: age, gender, height, weight, education level, country of birth, experience of cancer, and smoking status.

Due to the number of questions being asked, some sections were asked of only half the sample. Respondents were allocated to half of the sample on a random basis. Figure 1 shows that all respondents completed sections A and D of the survey. Approximately half (n=1503) of these respondents completed section B, while the other half (n=1500) completed section C. The questionnaire took on average 20.5 minutes to complete. All women were asked the questions about cervical screening.

Figure 1. Questionnaire sections



## Data analysis

Analysis was undertaken using SPSS (version 14.0). Chi-square tests were used to explore the relationship between each dependent variable of interest and demographic measures. The relationships between dependent variables and other types of independent variables were also considered, as determined by proposed hypotheses. A p-value of less than 0.01 was deemed statistically significant. Only significant tests are reported in full in the text.

## RESULTS

### Overall response rate

A total of 26,594 calls were initiated from Victorian records randomly selected from the Electronic White Pages<sup>1</sup> and a random digit dial sample. Of the 8,024 households that were contacted and eligible, 3,003 interviews were completed, giving a response rate of 37.5%. This is a lower response rate than achieved by other Cancer Council surveys, but reflects the fact that the name of the Cancer Council was not mentioned at the start of the survey, so that respondents would not be primed. A response rate of 37.5%, however, compares favourably with the 41% response rate for the 2005 Cancer Issues Population Survey and for general population surveys conducted by other Australian market research companies.

Figure 2: Survey response rates



<sup>1</sup>Desk top Marketing Services, July 2004 release.

## **Pap test sample**

The sample comprised 1247 women, in the relevant age range 18 to 69. The data was weighted by age according to 2001 Victorian ABS population data. Of these women, 100 indicated they had had a hysterectomy, and therefore were removed from further analyses, as most of the questions were not relevant to them. For an additional 18 women it was not possible to determine their hysterectomy status and these cases were also removed, leaving a sample of 1129 women.

Weighted age distribution of the sample was: 18 to 29 (26.9%), 30-39 (25.0%), 40-49 (22.3%), 50-59 (15.9%) and 60-69 (9.9%). Over two-thirds of the sample (72.1%) came from metropolitan Melbourne and the rest from other parts of Victoria, which reflects the geographic spread of the Victorian population.

The majority of participants had been born in Australia (78.4%), with the Asia/Pacific region (7.0%), the UK and Ireland (4.8%) and other parts of Europe (4.5%) being the most common other regions. Consequently, the vast majority of the sample spoke English at home (93.0%), with no other single language being used in more than 1% of homes. Over half of the sample was employed (57.1%), with a further 18.1% listing their occupation as home duties, 9.2% saying they were students, and 5.9% as retired. Small numbers were unable to work (2.2%) or were unemployed (1.1%). Nearly one third (28.6%) of the sample had not completed secondary school, 32.5% had completed school or technical college, and 38.6% reported they had completed a tertiary degree.

## **Pap test behaviour**

### **Ever had a test**

Women were initially asked whether they had ever had a Pap test and 994 (90.0%) indicated they had undergone at least one. Table 1 shows the proportions of women who had had a test by age group, education level and location of residence.

Table 1: Ever had a test by age, education, location

	Have had test
<b>Age</b>	
20-29 (n=296)	68.6%
30-39 (n=277)	96.8%
40-49 (n=247)	97.2%
50-59 (n=176)	99.4%
60-69 (n=109)	99.1%
<b>Education level</b>	
Not completed school (n=315)	94.0%
Completed high school (n=359)	85.0%
Tertiary degree (n=426)	91.8%
<b>Location</b>	
Melbourne (n=797)	89.3%
Not Melbourne (n=308)	91.9%

There was a relationship between whether women had a Pap test and age, with those aged 18-29 far less likely than any other age group to have had a Pap test ( $\chi^2 (4)=205.6$ ,  $p<.001$ ). There was also an association with education, with those who had completed secondary education less likely to have had a test than either those who had not completed school or those who had completed tertiary education ( $\chi^2 (2)=17.4$ ,  $p<.001$ ). This is probably related to age, as a greater number of older women had not completed school compared to younger women. There was no significant relationship between having had a Pap test and whether women lived in metropolitan Melbourne or other parts of Victoria.

### Usual Pap test behaviour

Of those women who had not had a hysterectomy and reported having had at least one Pap test (n=993), 18.8% reported that they had a Pap test every year (annual), 55.1% indicated that they had a Pap test every two years (appropriate), and 15.5% said they meant to have a Pap test every two years but usually left it longer (well-intentioned). Only 3.3% reported that they had tests irregularly (irregular), with 5.8% saying they had only ever had one or two tests during their lifetime (minimal), and 1.5% saying they no longer required tests. Table 2 presents data on women's usual Pap test behaviour by age, education level and location of residence, excluding the women who said they no longer needed tests and collapsing the irregular/minimal categories into one.

Table 2: Usual Pap test behaviour of those previously tested by age, education and location (percentages)

	Annual	Appropriate	Well-intentioned	Irregular/minimal
<b>Age</b>				
20-29 (n=203)	21.2	43.3	14.8	20.7
30-39 (n=265)	19.6	52.5	22.3	5.7
40-49 (n=239)	20.1	60.3	15.5	4.2
50-59 (n=172)	19.8	59.9	10.5	9.9
60-69 (n=101)	9.9	71.3	10.9	7.9
<b>Education level</b>				
Not completed school (n=290)	19.7	57.2	13.8	9.3
Completed high school (n=302)	21.2	52.6	15.2	10.9
Tertiary degree (n=383)	17.0	57.7	17.5	7.8
<b>Location</b>				
Melbourne (n=700)	19.9	54.1	16.7	9.3
Not Melbourne (n=278)	17.3	60.1	13.3	9.4

There was an association with age and usual Pap test behaviour, with the youngest group the most likely to say they had irregular or minimal tests (20.7%) ( $\chi^2(12)=67.3, p<.001$ ). Appropriate (two-yearly) screening increased with age from 43.3% for 18-29 year olds, to 71.3% for 60-69 year olds.

Education level and location of residence were not associated with usual Pap test behaviour.

### Recency of test

Women who had not had a hysterectomy and who'd had at least one Pap test were asked how recent their last Pap test had been. More than half (54.8%) said they had a test in the past year (recent) and 28.1% said their test had been between one and two years ago (adequate). This indicates that 82.9% of the women surveyed were up-to-date with their tests. Another 10% had gone for more than two but less than three years since their last test (overdue) and 7.1% were classified as having lapsed in their screening, having left it for more than three years since their last test. Table 3 presents data on recency of tests by age, education level and location of residence.

Table 3: Recency of Pap test for those previously tested, by age, education and location (percentages)

	Up-to-date (up to 2years)	Overdue (2-3 years)	Lapsed (more than 3 years)
<b>Age</b>			
20-29 (n=203)	87.2	7.4	5.4
30-39 (n=268)	81.0	12.7	6.3
40-49 (n=240)	82.5	11.7	5.8
50-59 (n=175)	83.4	10.3	6.3
60-69 (n=108)	79.6	4.6	15.7
<b>Education level</b>			
Not completed school (n=296)	79.7	11.1	9.1
Completed high school (n=305)	83.9	8.5	7.5
Tertiary degree (n=392)	84.4	10.5	5.1
<b>Location</b>			
Melbourne (n=711)	83.1	9.7	7.2
Not Melbourne (n=283)	82.3	11.0	6.7

There was an association between age and recency of test, with the youngest group most likely to say they were up-to-date with their tests and the oldest group most likely to say they had not been tested for at least three years ( $\chi^2(8)=20.98$ ,  $p=.007$ ). However, it must be taken into account that these figures only relate to women who have had at least one test, so among the youngest group this suggests that of the two-thirds who have been tested (see Table 1), most are up-to-date. Women aged 18 to 29 are still the group most likely not to have been tested.

Education level and location of residence were not associated with recency of Pap tests.

### Reasons for not having Pap tests

Women who had gone for at least three years without a Pap test were asked why this was the case (n=70). The most common reason women gave was that it was not a priority (n=16, 23.4%), that they had not got around to it (n=14, 19.4%) or that it was embarrassing (n=12, 16.9%). Also mentioned by a few women were GP issues (11). (Note these data exclude women who had a hysterectomy. If these women were included in these data, that would be the most common reason for going more than three years without a test).

There were 110 women who said they had not had a hysterectomy and who also said they had never had a Pap test. When asked why they had never had a test, 18 (17%) gave the valid response that they had not yet had sex. Twenty-three (21.2%) indicated that they did not need a test, but did not give a reason, so there is no way of knowing whether this was a valid reason or not. Sixteen women said the test was too embarrassing or scary, 11 attributed not testing to their age and others indicated that they had not got around to it (10), had not thought of it (11) or simply did not want to (9). There were only four women who indicated they had never heard of the test.

## Most recent Pap test

### Prompts to the test

Women who had had a Pap test in the past three years (n=920) were asked, “Thinking back to your last Pap test, did you ask for it to be done, or did your doctor suggest it?” Women who indicated they had asked for the test were then asked, “Did you receive a reminder letter?” This question was limited to women who had had a Pap test in the past three years, as they were considered to be likely to accurately remember what prompted them to have it. Most respondents indicated they had asked for the test, with 35.9% indicating it was purely self-initiated and 36.8% of respondents saying they asked themselves, but had received a reminder letter. Just over one-quarter (27.6%) said their doctor had suggested they have the test. Five women indicated they could not remember what had happened, and were excluded from further analysis to eliminate the problem of small cell sizes. Table 4 presents data on what prompted the test by age.

Table 4: Prompts to most recent Pap test by age

	18-29	30-39	40-49	50-59	60-69	Total
	n=192	n=252	n=225	n=161	n=90	n=920
I asked (unprompted)	42.3%	38.5%	29.8%	38.5%	26.7%	36.1%
I asked (received letter)	25.5%	32.1%	46.7%	41.0%	42.2%	36.8%
Doctor suggested it	31.8%	29.4%	23.6%	20.5%	31.1%	27.1%

There was an association between age and what prompted the test ( $\chi^2(8)=29.43$ ,  $p<.001$ ), though it was not a straightforward relationship. Younger women (18-29 and 30-39) were less likely to have relied on a letter than older women, whereas a letter was the most important prompt for the age groups over 40. Doctor prompts were less important for women in their forties and fifties than other age groups.

Table 5 presents data on what prompted women to have a Pap test by their description of their usual Pap testing behaviour. Women who indicated they no longer needed tests are excluded from the data.

Table 5: Prompts to most recent Pap test by usual Pap test behaviour

	Annual	Appropriate	Well-intentioned	Irregular/minimal	Total
	n=186	n=543	n=123	n=56	n=908
I asked (unprompted)	41.9%	32.0%	44.7%	42.9%	36.5%
I asked (received letter)	30.1%	44.6%	22.8%	17.9%	37.0%
Doctor suggested it	28.0%	23.4%	32.5%	39.3%	26.5%

An association was also found between who asked for the test and a woman's usual Pap test behaviour ( $\chi^2(6)=37.69, p<.001$ ). Women who are screened appropriately (that is, they say they screen every two years) were very reliant on the letter (44.6%). Women who have a test annually and those who mean to have a test every two years but usually leave it longer tended to ask for the test themselves (41.9% and 44.7%, respectively). Of the women who have irregular tests or who have only ever had one or two tests, a similar proportion asked for the test themselves (42.9%) or waited until the doctor suggested it (39.3%). A small proportion of these women said the prompt to being tested was a reminder letter (17.9%).

Women who rely on the VCCR letter as a prompt would be more accurately classified as "well-intentioned", as that reminder letter is not sent until a woman's test is three months overdue. However, it is quite reasonable that they would perceive themselves as screening each two years if they reliably respond once they receive the letter.

No association was found between the prompt for the test and whether the woman lived in the metropolitan region or not, or how recent her test had been (when recency was categorised as "within the last 2 years" or "more than 2 years ago").

### Practitioner for last test

Those women who had had a Pap test in the previous three years (n=925) were then asked whether the test was carried out by their usual doctor, a different doctor, a gynaecologist or nurse. Most women indicated that their last Pap test was carried out by a GP, with 64.1% saying they saw their usual doctor and 16.8% of that the test was carried out by a different doctor. Overall, 14.2% saw a gynaecologist, and 5.0% a nurse.

Table 6: Practitioner for last test by age (years)

	18-29	30-39	40-49	50-59	60-69	Total
	n=193	n=250	n=227	n=164	n=91	n=925
Your usual doctor	61.1%	55.6%	70.5%	67.7%	71.4%	64.1%
A different doctor	22.3%	18.8%	14.5%	13.4%	11.0%	16.8%
Gynaecologist or obstetrician	13.0%	20.4%	11.9%	12.2%	8.8%	14.2%
Nurse	3.6%	5.2%	3.1%	6.7%	8.8%	5.0%

There was an association between age and the type of provider women saw for their Pap test, as shown in Table 6 ( $\chi^2(12)=29.53, p<.003$ ). Women in their 30s were more likely than any other group to see a gynaecologist, which is probably related to issues around child-bearing and fertility. Women in their 20s and 30s were also more likely to see “a different doctor” than older women, whereas the “usual doctor” was more important to women over 40. Nurses conduct relatively few tests, but were more important as service providers for women over 50 than for the other age groups.

There was also an association between where women lived and who they saw for their Pap test ( $\chi^2(3)=19.55, p<.001$ ). Women in metropolitan areas were more likely to see a gynaecologist (15.6%) than non-metropolitan women (10.6%) and non-metropolitan women were more likely to see a nurse (9.5%) than metropolitan women (3.2%). There was some difference in the proportions seeing a “different” doctor with more metropolitan women (17.6%) than non-metropolitan (14.4%) indicating this, probably reflecting the wider range of choices available to women in metropolitan areas.

The type of provider women had for their last Pap test was not associated with how recent their last test was (categorised as less than 2 years, 2-3 years). There was a significant association between “usual Pap test behaviour” and the type of provider ( $\chi^2(9)=51.1, p<.001$ ). Overall, around 14% of women had Pap tests with a gynaecologist, but 26% of those who had annual tests saw a gynaecologist. Women who were tested every two years were most likely to see their “usual doctor” (68.3%). This may reflect that women who had experienced cervical abnormalities and who therefore required annual tests were more likely to see a gynaecologist than a general practitioner.

### **Awareness of causes of cervical cancer**

To explore women’s awareness of the causes of cervical cancer, women were asked the open-ended question “As far as you know, what things can make a woman more likely to get cervical cancer?” This was asked of all women surveyed, regardless of whether they had undergone a Pap test or not. Cervical cancer is associated with human papilloma virus (HPV) in 99.7% of cases (Szarewski, 2005). Increased risk of infection with HPV is associated with an increased number of sexual partners and not using condoms, but as HPV is usually cleared from the body naturally without causing any problems, there must be other mediating factors which lead to the virus causing cervical abnormalities. Research suggests these mediating factors may include, but are not limited to: smoking, a compromised immune system, poor diet, being on the pill, having more than seven children and having a partner who is not circumcised (see [www.cancerhelp.org.uk](http://www.cancerhelp.org.uk), cervical cancer risks and causes).

The key purpose of this question was to determine whether women were aware of HPV as a cause of cervical cancer without prompting. It was not anticipated that there would be good knowledge of the mediating factors described above. Understandably, this question prompted a very broad range of responses. The most common answer was “I don’t know”, which nearly half the women (46.1%) gave as their response. The second most frequent response was “family history/ heredity/genetics” (17.9%), which is still under investigation as a possible mediating factor.

HPV was mentioned by 11.4% of women, and only two women mentioned not being vaccinated against HPV as a potential cause. Only 2.9% of the sample named “not having Pap tests” as contributing to the risks of cervical cancer, despite the fact that women would have been primed to be thinking about Pap tests by the earlier questions in the survey.

Table 7 presents data only for the responses that were given by at least 5% of the total sample and Appendix A presents data on the full range of responses. Responses which were named by fewer than 5% of the sample included responses which demonstrated some understanding of the cause of cervical cancer, such as “sex” 3.8%, genital warts/herpes/virus (2.7%) or having no or inadequate Pap tests (2.9%).

Chi-square analyses were conducted on each of the key responses by age, to determine if women of different ages had different opinions on the things which contributed to the likelihood of developing cervical cancer. Women were more likely to say they did not know of any contributory factors if they were in the 50-59 or 60-69 year age categories. Younger women were particularly like to name family history/heredity/genetics as a cause. More older women thought many sexual partners may contribute to risk than did younger women, and younger women were more likely to say smoking may contribute.

**Table 7: Most common beliefs about the causes of cervical cancer by age (years)**

	18-29	30-39	40-49	50-59	60-69	Total
	n=297	n=277	n=247	n=175	n=109	n=1105
Don't know <sup>a</sup>	43.8%	41.2%	44.5%	53.1%	56.9%	46.1%
Family history/ heredity/ genetics <sup>a</sup>	20.9%	21.7%	16.6%	13.7%	10.1%	17.9%
Many sexual partners <sup>a</sup>	8.8%	9.7%	15.0%	17.6%	17.4%	12.7%
Human papilloma virus (HPV)	14.9%	9.7%	12.6%	10.3%	5.5%	11.4%
Not using condoms	10.1%	6.9%	6.5%	5.7%	4.6%	7.2%
Smoking <sup>a</sup>	8.4%	10.1%	8.5%	1.7%	0.9%	7.1%
Sexually transmitted disease (not specified)	8.4%	5.8%	4.0%	9.7%	4.6%	6.6%

Note: multiple responses possible.

<sup>a</sup> Significant at  $p < .05$

“Don't know” responses were also analysed by education and location. There was an association between women's level of education and their inability to name any contributing factors. Women who had not completed secondary school were more likely to say “don't know” (63.3%) than women who had completed secondary education (44.7%) or completed tertiary education (34.2%) ( $\chi^2 (2)=62.25, p < .001$ ) Women who lived outside Melbourne were more likely than those who lived in Melbourne to say “don't know” (52.6% and 43.7%, respectively) ( $\chi^2 (1)=7.13, p = .008$ ).

## HPV vaccine

Women were next asked a series of question about the HPV vaccine – both their knowledge of it and intention of having it. The questions were worded to ensure that women knew what vaccine was being discussed, whether they thought of it as the “HPV”, “human papilloma virus” or “cervical cancer” vaccine. When response to these questions was examined by age women were classified into three age groups: 18 to 26 (who were eligible for the government funded screening program), 27 to 45 (who were

able to access the vaccine if they paid for it themselves), and older women 46 to 69 (who could not have the vaccine).

### Awareness

The first question women were asked about the HPV vaccine was “Are you aware that a vaccine to prevent cervical cancer has been recently developed? The vaccine is called the human papilloma virus or HPV vaccine.”

A very high proportion of women said they were aware of the vaccine (93.5%). Seven women were unsure if they had heard of it, so were excluded from further analysis.

The high level of awareness extended across age groups, education, location of residence, recency of test and usual Pap test behaviour.

### Knowledge of the vaccine

Overall 1056 women indicated they were aware that an HPV vaccine had been developed. To determine how much these women actually understood about the vaccine, they were read series of statements about it and had to indicate whether they were true or false. The statements were:

- v “The vaccine is effective in preventing cervical cancer in women of any age” (false)

It is possible that the vaccine maybe effective across all age groups, providing women had not already been exposed to the relevant strains of HPV. However, in Australia the CSL vaccine (Gardasil) has only been approved for use in women up to age 26 and the GSK vaccine has been approved for women up to 45. Thus in terms of the information available to the general public and the way in which the vaccine can be used in Australia, the statement is false.

- v “Pap tests are still needed for those who have had the vaccine” (true)

It is recommended that women who have had the vaccine continue to have Pap tests as the vaccine does not guard against all the strains of HPV which may lead to cervical cancer.

- v “The vaccine can prevent all cervical cancers if it is given early enough” (false)

Vaccinating women early, before they are exposed to HPV, is important, but the vaccine does not cover all types of HPV and will not prevent all cervical cancers.

- v “The vaccine can be used to treat women who have cervical cancer or cervical abnormalities” (false)

The vaccine is a preventative measure, not a treatment.

Response to these questions was examined by age, educational level and usual Pap test behaviour. A separate analysis was also conducted for young women aged 18 to 26 by educational level, as they are the group most directly affected by the vaccine. Current patterns in school attendance meant the number of young women who had not completed school was quite low (n=31, of whom 29 had heard of the vaccine).

When looking at response to the HPV questions by usual Pap test behaviour the women who had said they no longer required Pap tests, who refused to answer the question or indicated they could not describe their usual behaviour were excluded from analysis due to small cell sizes. Usual Pap test behaviour was not associated with any item so the results are not reported for the other items.

### Vaccine prevents cancer for women of any age

Women were less certain about the effectiveness of the vaccine for women of any age. Just under half the women answered this question correctly (49.5%), by identifying that the statement was false. As the data in Table 8 indicate, while there were few differences in the proportions of women who were correct on this issue, younger women were more likely to believe the statement was true, and uncertainty increased with age.

Table 8: The vaccine is effective in preventing cervical cancer for women of any age by age (years)

	18-26	27-45	46-69	Total
	n=198	n=491	n=343	n=1032
True	41.9%	31.6%	33.5%	34.2%
False (correct)	49.5%	51.3%	46.9%	49.5%
Can't say	8.6%	17.1%	19.5%	16.3%

$\chi^2 (4)=14.9, p=.005$

There was an association between education and belief in the efficacy of the vaccine. As the data in Table 9 indicate, increased levels of education were associated with increased levels of knowledge.

Table 9: The vaccine is effective in preventing cervical cancer for women of any age by education

	Not secondary	Completed secondary	Completed tertiary	Total
	n=293	n=336	n=402	n=1031
True	40.3%	35.4%	28.4%	34.0%
False (correct)	38.6%	48.5%	58.7%	49.7%
Can't say	21.2%	16.1%	12.9%	16.3%

$\chi^2 (4) = 28.3, p<.001$

Young women of different educational status did not differ significantly in their views on this question.

### Pap tests are needed after the HPV vaccine

As the data in Table 10 indicate, awareness that Pap tests were still needed after having the vaccine was very high (90.2%). Only 2.4% of women were unable to answer this question and 7.4% mistakenly said screening was not needed after vaccination. There was an association between age and knowledge, with the youngest group particularly well-informed (99.5% correct) and the oldest group most likely to be uncertain about whether Pap tests were still needed (12.5%).

Table 10: Pap tests are still needed for women who have had the vaccine, by age (years)

	18-26	27-45	46-69	Total
	n=198	n=491	n=344	n=1033
True (correct)	99.5%	90.0%	85.2%	90.2%
False	0.5%	3.3%	2.2%	2.4%
Can't say	0.0%	6.7%	12.5%	7.4%

$\chi^2(4) = 34.5, p < .001$  (Note: one cell expected count < 5)

There was no significant association with education on this item. The very high level of agreement with this item meant that the data could not be reliably analysed by usual Pap test behaviour due to the small cell sizes in some categories.

### Vaccine prevents all cancer if given early enough

Around half of the women correctly identified that this statement was false (53.9%), with a quarter (24.9%) saying it was true (see Table 11). The accuracy of responses was very different across the different age groups, with far more young women (72.2%) saying the statement was false than older women. Uncertainty increased with age, with more than a quarter of those aged 46 to 69 uncertain of their response.

Table 11: The vaccine can prevent all cervical cancers if it is given early enough, by age group

	18-26	27-45	46-69	Total
	n=198	n=491	n=344	n=1033
True	23.2%	22.4%	29.4%	24.9%
False (correct)	72.2%	54.0%	43.3%	53.9%
Can't say	4.5%	23.6%	27.3%	21.2%

$\chi^2(4) = 57.0, p < .001$

As the data in Table 12 indicate, increased levels of education were associated with increased levels of knowledge. One-third of women who had not completed secondary school indicated that the statement was true.

Table 12: The vaccine can prevent all cervical cancers if it is given early enough, by education

	Not secondary	Completed secondary	Completed tertiary	Total
	n=293	n=335	n=402	n=1030
True	34.1%	25.7%	17.4%	24.9%
False (correct)	41.3%	53.7%	63.4%	54.0%
Can't say	24.6%	20.6%	19.2%	21.2%

$\chi^2(4) = 37.1, p < .001$

Young women who were tertiary educated were more likely to realise this statement was false (85.5%) than those who had not completed school (60.7%) or who had completed school but not tertiary education (68.3%), when the analysis was conducted excluding the eight young women who were unsure ( $\chi^2(2)=14.42, p<.001$ ).

### Vaccine can be used as treatment

About two-thirds of women (64.8%) realised that the vaccine could not be used as a treatment (see Table 13). Incorrect responses were given by one woman in ten, but uncertainty was high, especially among older women. Again, the youngest women were the best informed with 77.9% giving the correct answer.

Table 13: The vaccine can be used to treat women who have cervical cancer or cervical abnormalities by age

	18-26	27-45	46-69	Total
	n=199	n=490	n=344	n=1033
True	12.1%	9.6%	7.6%	9.4%
False (correct)	77.9%	64.3%	57.8%	64.8%
Can't say	10.1%	26.1%	34.6%	25.8%

$\chi^2(4) = 40.0, p<.001$

As the data in Table 14 (over page) indicate, increased levels of education were associated with increased levels of knowledge, and those who had not completed secondary school were most likely to be unsure about the statement.

Table 14: The vaccine can be used to treat women who have cervical cancer or cervical abnormalities, by education

	Not secondary	Completed secondary	Completed tertiary	Total
	293	336	402	1031
True	10.6%	11.0%	6.7%	9.2%
False (correct)	57.7%	63.4%	71.4%	64.9%
Can't say	31.7%	25.6%	21.9%	25.9%

$\chi^2(4) = 15.5, p=.003$

Young women of different educational status did not differ significantly in their views on this question.

### Behaviour in response to the vaccine being available

Respondents were asked whether they agreed or disagreed with the statement, "Knowing the vaccine is available makes me less likely to have a Pap test in the future". A very high proportion of respondents (92.9%) disagreed with this statement, indicating that knowing about the vaccine would *not* make them less likely to have a Pap test. One in ten young women agreed with this statement.

Table 15: Knowing the vaccine is available makes me less likely to have a Pap test in the future, by age group

	18-26	27-45	46-69	Total
	n=198	n=491	n=344	n=1033
True	10.6%	3.5%	3.8%	4.9%
False	88.4%	94.5%	92.4%	92.9%
Can't say	1.0%	2.0%	3.8%	2.4%

$\chi^2 (2) = 16.3, p < .001$  (Can't say responses excluded due to small cell sizes)

There was no association between this variable and education level, or for educational level among young women.

### I am planning to have the vaccine

Almost three-quarters (71.2%) of the 18 to 26 year olds indicated that they were planning to have the vaccine, compared to only 13.6% of the women aged 27 to 45 (who would have to pay for the vaccine themselves). Of the women for whom the vaccine is not approved (those aged 46 to 69 years), 5.8% indicated they were planning to have it.

Table 16: I am planning to have the vaccine, by age group

	18-26	27-45 y	46-69	Total
	n=198	n=491	n=344	n=1033
Yes	71.2%	13.6%	5.8%	22.1%
No	21.7%	73.7%	85.5%	67.7%
Can't say	7.1%	12.6%	8.7%	10.3%

$\chi^2 (4) = 359.6, p < .001$

There was a significant association between education level and intention to have the vaccine, with 29.9% of those who had completed secondary education agreeing they would have the vaccine compared with 15% of those who hadn't completed secondary school and 20.4% who had completed tertiary education. ( $\chi^2 (4) = 22.77, p < .001$ ). Among 18-26 year olds, there was a tendency for fewer of those who had not completed secondary school to say they planned to have the vaccine (55.2%) than those who had completed secondary school (74.8%) or completed tertiary study (71.9%). However, this effect was not significant, and the small number of young women in the survey who had not completed secondary school (n=29) means that the result must be treated with caution.

## DISCUSSION

The first aim of this study was to determine what had prompted women who had been screened in the past three years to have that Pap test. The survey indicated that about one-quarter of women had waited for the doctor to suggest a Pap test last time they had undergone one, and about three-quarters asked for it themselves. Of those who asked for the test themselves, about half did so because they had received a letter, and the

others were completely self-initiated. The doctor suggesting a test was important for women aged 18-29, possibly because it was initiating their first test, but initiating the test themselves was the most important prompt for women in this age group. Women aged 60-69, tend not to ask for the test themselves (26.7%) but rely on letters (42.2%) or the doctor (31.1%) possibly because women in this age group are inclined to think they do not need a test unless it is suggested to them. Reminder letters were particularly important for women over 40.

The number of women who indicated their doctor had suggested the test had dropped from 54.5% in 2005 to 27.1% in 2007. It is not clear why this would have occurred – the question was changed in 2007 to include an extra probe to clarify whether respondents who indicated that they had asked for the test had actually been prompted to do so by receiving a letter, but the initial question did not change. This may suggest that women are taking more responsibility for their own screening, but this needs to be monitored in the future to determine if there is a trend or whether either the 2005 or 2007 results were aberrations.

In keeping with the decline in the numbers saying their doctor had suggested a Pap test, there had also been a slight decline from 2005 to 2007 in the proportion of women who indicated they saw their usual doctor when they had a Pap test (69.7% to 64.1%). There were corresponding slight increases in the proportions seeing other doctors, gynaecologists or nurses. Nevertheless, nearly two-thirds of women still said they saw their usual doctor for Pap tests and GPs remain a crucial part of Pap test provision.

The second aim of the study was to look at women's unprompted knowledge of the causes of cervical cancer. Spontaneous awareness of the factors which can make cervical cancer more likely were quite low, and nearly half the women surveyed (46.1%) were unable to suggest any possible factor. Few women named either not having Pap tests or having inadequate Pap tests (n=32) or not having the vaccine (n=2) as making cervical cancer more likely. However, many women who named some contributor to the risks of cervical cancer seemed to have some grasp of the link between sexual activity and cervical cancer at least at a limited level.

In Britain in 2002 a similar question was asked of both men and women in a face-to-face survey (Waller et al, 2004). In that study "don't know" was also the most common result (32.1% of women). Responses in the British study were coded differently, so it is not possible to compare all the responses. However, there are some comparisons which can be made. Having many sexual partners, which only 13% of the Australian women mentioned, was named by 29.7% of the British sample, and having sex at an early age was mentioned by 12.8% of the British women and 2.4% of the Australian. The British women do appear to be more aware of sexual behaviour risk factors than women in Australia, where the emphasis in communications is on "all women who have had sex need a Pap test", rather than on any individual assessment of behavioural risk. On the other hand, only 0.9% of the British sample named HPV, compared with 11% of the Australian women – however this is probably related to the timing of our study, which was conducted after the commencement of the HPV vaccination program which garnered a great deal of publicity.

The final aim of the study was to look at women's awareness of the HPV vaccine and their knowledge of it. Although few women spontaneously talked about HPV or failure to have the vaccine as contributing to the likelihood of cervical cancer, awareness of the HPV vaccine was very high (93.6%) when women were asked specifically about it.

A key concern of PapScreen has been that the advent of the vaccine would dilute the message that women need regular Pap tests and that women who had the vaccine, or

even who just knew of the vaccine, may believe that Pap tests were no longer necessary. It was reassuring to see that women understood that Pap tests were still required for those who had had the vaccine. It was particularly gratifying that women in the 18 to 26 year age group had such good knowledge that Pap tests would still be needed (99.3%), given that they are the ones who are most likely to be directly affected by vaccination. This awareness level was particularly high given that PapScreen's media campaign, that stressed women still need Pap tests after having the vaccine, had not yet been aired. Of course it remains to be seen whether this stated belief will translate into behaviour, that is, whether women who have the vaccine will actually continue to have regular Pap tests. The linkage between the VCCR and the HPV register will answer this question in years to come.

Apart from indicating that they knew that women needed to continue to have Pap tests even if they had been vaccinated, women's knowledge about the vaccine was quite poor. Only about half knew that the vaccine could not be used for women of any age, half knew it could not prevent all cervical cancers and two-thirds knew it could not be used as a treatment. There were very high levels of uncertainty on these items, and in all cases the level of uncertainty increased with age. Given the lack of direct relevance of the vaccine to women aged 46 to 69, their lack of knowledge is less concerning than the incorrect or uncertain responses of the youngest group. However it does still reflect confusion among the population about the vaccine.

Although younger women indicated that they had a high level of knowledge about the need for Pap tests after vaccination, there was a discrepancy in that 11% agreed that knowing the vaccine was available would make it less likely they would have a Pap test in future. One-quarter also believed the vaccine prevented all cancers if given early enough. It seems that the message that Pap tests are still needed by women who have had the vaccine has been uncritically accepted, especially by younger women, but that for many there is no actual knowledge about the role of HPV in causing cervical cancer or the role of the vaccine in preventing it underpinning this belief. Thus 90% of women report Pap tests are necessary after the vaccine, but 25% still believe the vaccine can prevent all cervical cancer. Alternatively, it may be that the knowledge which is missing from women's understanding is that Pap tests are specifically for testing for the precursors of cervical cancer. Thus some women may believe a Pap test is still necessary after the vaccine because they believe the Pap test has other purposes, such as testing for STIs or ovarian cancer.

Women's stated awareness that Pap tests are still needed after vaccination is encouraging. However, the lack of knowledge underpinning this belief is of concern. PapScreen Victoria needs to continue to promote the message that women still need Pap tests after vaccination, but also needs to ensure that women have a better understanding of the HPV-cervical cancer link, so that they are properly informed about *why* they still need Pap tests.

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## APPENDIX A

Table 17: Belief in causes of cervical cancer by age

	18-29	30-39	40-49	50-59	60-69	Total
	297	277	247	175	109	1105
Don't know	130 43.8%	114 41.2%	110 44.5%	93 53.1%	62 56.9%	528 46.1%
Human papilloma virus (HPV)	44 14.9%	27 9.7%	31 12.6%	18 10.3%	6 5.5%	126 11.4%
Sexually transmitted disease (not specified)	25 8.4%	16 5.8%	10 4.0%	17 9.7%	5 4.6%	73 6.6%
Smoking	25 8.4%	28 10.1%	21 8.5%	3 1.7%	1 0.9%	78 7.1%
Many sexual partners	26 8.8	27 9.7	37 15.0	31 17.6	19 17.4	140 12.7%
Family history/ heredity/ genetics	62 20.9	60 21.7	41 16.6	24 13.7	11 10.1	198 17.9%
Not using condoms	30 10.1	19 6.9	16 6.5	10 5.7	5 4.6	80 7.2%
Age	3 1.0	1 0.4	5 2.0	2 1.1	1 0.9	12 1.1%
Genital warts/herpes/virus	1 0.3	8 2.9	9 3.6	8 4.6	4 3.7	30 2.7%
Sex	15 5.1	10 3.6	8 3.2	4 2.3	5 4.6	42 3.8%
Sex at an early age	9 3.0	9 3.2	3 1.2	4 2.3	2 1.8	27 2.4%
Oral contraceptive pill	10 3.4	13 4.7	6 2.4	2 1.1	2 1.8	33 3.0%
Tampons	1 0.3	2 0.7	1 0.4	0 0.0	0 0.0	4 0.4%
Cancer cells/ change in cells	3 1.0	5 1.8	5 2.0	0 0.0	1 0.9	14 1.3%
Children late/never	0 0.0	4 1.4	3 1.2	2 1.1	0 0.0	9 0.8%
Children	0 0.0	3 1.1	0 0.0	0 0.0	0 0.0	3 0.3%
Poor hygiene /infections	2 0.7	4 1.4	5 2.0	3 1.7	2 1.8	16 1.4%
Lifestyle issues eg diet, stress	5 1.7	12 4.3	11 4.5	4 2.3	2 1.8	34 3.2%
No or inadequate Pap tests	8 2.7	12 4.0	11 4.5	1 0.6	1 0.9	32 2.9%
No vaccine	1 0.3	1 0.4	0 0.0	0 0.0	0 0.0	2 0.2%

Note: multiple responses possible. 35 responses were uncoded.