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# Opinion survey of Hong Kong private primary care doctors about cervical screening

## 香港私立基層醫護醫生對子宮頸癌檢查的意見調查

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The policy and practice of Hong Kong private primary care doctors regarding cervical screening were investigated by way of two different questionnaires sent to comparable random survey samples. The overall response rate was 60.8% (313/515). Both sexes of eligible doctors believed that cervical smears were effective and important, but only 40.2% (47/117) of male doctors performed the test compared with 65.5% (19/29) of female doctors. Those doctors who do not perform the test themselves usually refer their patients elsewhere. The small proportion of private doctors offering cervical smears may reduce opportunities for women who need them. Over 80% of private doctors recommended annual smears despite local recommendations for 3-yearly tests, while graduates from western countries were more likely to recommend longer intervals. Since the proportion of women in Hong Kong having Papanicolaou tests is still low, effort should focus on providing smears for more women, rather than repeated annual testing of those who already participate.

利用兩組不同的問卷及使用可比的隨機抽樣調查方式，為香港私立基層醫護醫生對子宮頸癌檢查的政策和做法進行了調查。問卷的總反應率是60.8% (313/515)。無論男醫生或女醫生都認為子宮頸癌的檢查是有效且重要的，但真正曾為病人進行子宮頸癌的檢查，男醫生只有40.2% (47/117)，而女醫生則有65.5% (19/29)。那些未有替病人進行檢查的醫生往往把病人轉介到別處。只有較少數的私立醫生提供子宮頸癌檢查這現象，可能會減低有需要的婦女接受檢查的機會。儘管當局建議本地女性每三年進行子宮頸癌檢查一次，但仍有80%以上的私立醫生建議每年檢查一次，而西方國家畢業的醫生則建議女性可隔更長的時間才檢查一次。由於在香港做過帕帕尼克拉烏(Papanicolaou)試驗的婦女比例仍偏低，當務之急是為更多的婦女提供子宮頸癌檢查，而不是每年為已檢查過的婦女重複檢驗。

### Key words:

*Cervix dysplasia;*  
*Cervix neoplasms;*  
*Family practice;*  
*Hong Kong;*  
*Primary health care*

### 關鍵詞：

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## Introduction

Despite screening by Papanicolaou tests being an effective preventive means of reducing morbidity and mortality due to cervical cancer, the full potential of this method is still not being realised in Hong Kong.<sup>1</sup> In this region, as elsewhere, nearly all women who get invasive cervical cancer have either not had a screen or their most recent one was performed a long time before the cancer presented.<sup>2</sup> Only half the women in Hong Kong know the purpose of cervical smears.<sup>3</sup> In these circumstances, private primary care doctors have a potentially important role in providing Papanicolaou tests or suggesting that women should have them. Taking

this role is, however, difficult because many Hong Kong women prefer not to have their genital areas examined by a male doctor. In addition, many women do not realise that many private primary care doctors can perform Papanicolaou tests, and thus attend specialised services instead.

There is international controversy about how often cervical smears should be repeated. Many American sources recommend annual smears,<sup>4,5</sup> whereas those from elsewhere who have examined the evidence recommend less frequent intervals.<sup>6-9</sup> Recently, the Hong Kong College of Obstetricians and Gynaecologists established a 3-yearly policy.<sup>10</sup> Thus, as part of a survey about attitudes to preventive medicine, this study asked Hong Kong private primary care doctors about their perception of cervical smears, whether they perform them, and what screening intervals they recommend to patients.

## Methods

A 4-page questionnaire was prepared covering a wide range of preventive activities and factors that doctors consider may affect their performance in Hong Kong. The latter included doctors' perceptions of the importance of cervical screening, the interval they suggested to patients for repeat smears, and whether they performed the smears themselves or referred their patients to other sources of care. Since the questionnaire was long, it was divided into two parts: A and B. Each part of the questionnaire was sent to parallel samples of doctors.

A list of doctors in Hong Kong was obtained from the medical register. Those who were registered as specialists, or who worked in government clinics, were excluded. A sample of 600 presumed primary care doctors was produced using a computerised random number table, and one questionnaire was sent to each half of the list. The questionnaires were numbered and the covering letter informed doctors that although the questionnaire was identifiable for follow-up purposes, data would be analysed with anonymity. A follow-up letter was sent 3 weeks later and, if there was no response, a second questionnaire was sent. If there was still no response after that, a telephone call was made asking whether the doctor could complete the questionnaire, with an offer to send another if needed.

Information was coded, entered, and analysed using computer packages: The Statistical Package for Social Science (Windows version 9.0; SPSS Inc., Chicago,

US), StatXact (StatXact 3 for Windows; CYTEL Software Corporation, Cambridge, US), and Confidence Interval Analysis (Windows version 2, London, UK),<sup>11</sup> using the Wilson method.

## Results

### *Response rates*

Doctors who were identified in error, either because they had left practice or were not in private primary care practice, were removed from the sample. There were 44 such doctors in group A and 41 in group B. The final response rates for these two groups were 64.1% (164/256) and 57.5% (149/259), respectively. Some answers were omitted, leading to slightly lower response rates for some questions.

Doctors who answered the two questionnaires were very similar in the proportion of men to women, origin of medical degree, duration of practice in Hong Kong, working hours, number of patients seen each day, and their estimates of the percentage of Hong Kong Chinese patients seen (data not shown). We thus conclude that these groups are comparable, with no obvious bias in response rate by sex or origin of degree.

Compared with information in the medical register, overall response rates were 60.9% (245/402) for male doctors and 60.2% (68/113) for female doctors. The response rate was 60.7% (139/229) for graduates of Hong Kong medical schools compared with 54.3% (69/127) for graduates of overseas medical schools. Licentiates of the Medical Council of Hong Kong had a 66.0% (105/159) reply rate. While these rates are lower than desired, there is no apparent systematic bias affecting a particular group.

### *Importance of cervical smears*

Questionnaire A first asked doctors what preventive activities they considered to be effective for their patients, then how important their patients thought these preventive activities were, and finally how often did they actually perform these activities for their patients. Cervical smear was one of the activities in the list. Tables 1 and 2 show how presumed private primary care doctors answered these three questions. Both male and female doctors had almost identical positive views about the effectiveness of the Papanicolaou test and its importance. Female doctors, however, were much more likely to report performing the test than males. Hong Kong graduates seemed to perform smears less frequently than those from elsewhere ( $P < 0.1$ ), although this could be a chance observation given the small sample size.

**Table 1. Doctors' perceptions of the Papanicolaou test (from questionnaire A): analysis by doctors' sex**

Sex	No value No. (%)	Small value No. (%)	Worthwhile No. (%)	Very worthwhile No. (%)	No.	Kruskal-Wallis $\chi^2$ (exact P)
<i>Effectiveness*</i>						
Male	0 (0.0)	2 (1.6)	42 (34.1)	79 (64.2)	123	0.024 (0.88)
Female	0 (0.0)	2 (5.1)	12 (30.8)	25 (64.1)	39	
Total					162	
<i>Importance†</i>						
Male	2 (1.8)	17 (14.9)	73 (64.0)	22 (19.3)	114	1.1 (0.29)
Female	0 (0.0)	4 (11.8)	21 (61.8)	9 (26.5)	34	
Total					148	
		Never No. (%)	Sometimes No. (%)	Usually No. (%)		
<i>Frequency‡</i>						
Male	22 (18.0)	67 (54.9)	33 (27.0)		122	11.0 (0.0008)
Female	3 (7.9)	13 (34.2)	22 (57.9)		38	
Total					160	

\* Effectiveness of Papanicolaou test for appropriately selected groups of patients

† Importance of Papanicolaou test perceived by their patients

‡ Frequency of performing Papanicolaou test

**Table 2. Doctors' perceptions of the Papanicolaou test (from questionnaire A): analysis by source of doctors' qualification**

Qualification source	No value No. (%)	Small value No. (%)	Worthwhile No. (%)	Very worthwhile No. (%)	No.	Kruskal-Wallis $\chi^2$ (exact P)
<i>Effectiveness*</i>						
Hong Kong	0 (0.0)	2 (2.9)	22 (31.4)	46 (65.7)	70	0.32 (0.86)
Other countries	0 (0.0)	1 (2.4)	13 (31.7)	27 (65.9)	41	
Licentiates	0 (0.0)	1 (2.0)	19 (37.3)	31 (60.8)	51	
Total					162	
<i>Importance†</i>						
Hong Kong	2 (3.0)	10 (15.2)	46 (69.7)	8 (12.1)	66	5.3 (0.069)
Other countries	0 (0.0)	8 (21.6)	18 (48.6)	11 (29.7)	37	
Licentiates	0 (0.0)	3 (6.7)	30 (66.7)	12 (26.7)	45	
Total					148	
		Never No. (%)	Sometimes No. (%)	Usually No. (%)		
<i>Frequency‡</i>						
Hong Kong	17 (24.3)	32 (45.7)	21 (30.0)		70	4.8 (0.091)
Other countries	4 (9.8)	24 (58.5)	13 (31.7)		41	
Licentiates	4 (8.2)	24 (49.0)	21 (42.9)		49	
Total					160	

\* Effectiveness of Papanicolaou test for appropriately selected groups of patients

† Importance of Papanicolaou test perceived by their patients

‡ Frequency of performing Papanicolaou test

**Screening intervals**

Questionnaire B asked doctors the routine recommendation for the interval of repeating Papanicolaou tests, followed by who actually performs smears for their patients, and finally the importance of a list of barriers to undertaking preventive medicine. Table 3 shows that approximately 80% of doctors recommended annual or 6-monthly smears. Table 4 shows that Hong Kong, other Asian graduates, and licentiate doctors were more likely to recommend frequent intervals than graduates from western countries (105/120 versus 16/23, Kruskal-Wallis  $\chi^2=4.8$ ,  $P=0.029$ ).

**Who performs the tests?**

Only 40.2% (47/117) of male doctors performed Papanicolaou tests themselves compared with 65.5% (19/29) of female doctors (Kruskal-Wallis  $\chi^2=6.03$ , degrees of freedom=1,  $P=0.014$ ). Of 117 male doctors contacted, 57 (48.7%) said that they were most likely to refer their patients to gynaecologists, 34 (29.1%) to Family Planning Association clinics, 17 (14.5%) to female doctors, 13 (11.1%) to public women's health centres, and 5 (4.3%) to hospital special clinics. A few female doctors also referred patients for cervical smears, with a similar preference: 6 (20.7%) to gynaecologists,

**Table 3. Recommended interval of the Papanicolaou test (from questionnaire B): analysis by doctors' sex\***

Sex	6-monthly No. (%)	1-yearly No. (%)	2-yearly No. (%)	3-yearly No. (%)	5-yearly No. (%)	Not at all No. (%)	Total
Male	6 (5.1)	89 (76.1)	14 (12.0)	5 (4.3)	0 (0.0)	3 (2.6)	117
Female	1 (3.4)	25 (86.2)	2 (6.9)	1 (3.4)	0 (0.0)	0 (0.0)	29
Total	7 (4.8)	114 (78.1)	16 (11.0)	6 (4.1)	0 (0.0)	3 (2.1)	146

\* Kruskal-Wallis  $\chi^2 = 0.61$ ,  $P = 0.42$ **Table 4. Recommended interval of the Papanicolaou test (from questionnaire B): analysis by source of doctors' qualification\***

Qualification source	6-monthly and 1-yearly No. (%)	95% CI	2-, 3-, or 5-yearly No. (%)	Total
Hong Kong	53 (81.5)	70.4, 89.1	12 (18.5)	65
Other Asian countries	4 (100.0)	51.0, 100.0	0 (0.0)	4
Western countries	16 (69.6)	49.1, 84.4	7 (30.4)	23
Licentiates	48 (94.1)	84.1, 98.0	3 (5.9)	51
Total	121 (84.6)	77.8, 89.6	22 (15.4)	143

\* Kruskal-Wallis  $\chi^2 = 8.7$ ,  $P = 0.034$ **Table 5. Doctors' perceptions of the importance of barriers to performing socially sensitive activities (gynaecological and breast examinations) for female patients (from questionnaire B): analysis by doctors' sex\***

Sex	Not important No. (%)	Slightly important No. (%)	Very important No. (%)	Total
Male	20 (17.4)	53 (46.1)	42 (36.5)	115
Female	11 (37.9)	12 (41.4)	6 (20.7)	29
Total	31 (21.5)	65 (45.1)	48 (33.3)	144

\* Kruskal-Wallis  $\chi^2 = 6.4$ ,  $P = 0.04$ 

5 (17.2%) to Family Planning Association Clinics, and 2 (6.9%) to public womens' health centres. Table 5 shows that compared with female doctors, male doctors assigned greater importance to the difficulty of undertaking socially sensitive activities (gynaecological and breast examinations) for female patients as a barrier to performing Papanicolaou tests.

## Discussion

Private primary care doctors practising in Hong Kong think that cervical smears are important, and recommend them to their patients. Not surprisingly, male doctors find the social sensitivity of gynaecological examinations an inhibiting factor, but it is encouraging that only one third regard this barrier as 'very important'. It is surprising, however, to find so many doctors recommending annual screening intervals, and that the place of graduation may be related to their recommendation. Where they were taught presumably affects their knowledge and possibly their approach to disputed issues such as screening intervals. This has implications for further education. Most male doctors do not undertake Papanicolaou tests themselves, and refer their patients to a wide range of providers. Even one third of female doctors refer their patients elsewhere. There may be a difference between Hong Kong graduates and those from elsewhere, but this needs

further study. The causes of these phenomena also require further study. Possible reasons besides social embarrassment are: doctors are not trained, or lack confidence, in performing Papanicolaou tests; the reward(s) for doing Papanicolaou tests are not worth the time and effort; the unavailability of chaperone or pathology support; or lack of patient acceptance.

## Limitations

Response rates for questionnaires A and B were only 64.1% and 57.5%, respectively, and there were slightly lower response rates for some questions because of answers being omitted. Nonetheless these figures are high for surveys of doctors in Hong Kong. In the lowest analysis, this would mean about 45% of doctors recommend annual cervical smears. On the basic characteristics that we measured, the respondents are little different from those who did not respond, so there is unlikely to be any major bias. Many non-respondents may not be in practice, or live outside of Hong Kong, maintaining their registration in case of wishing to return one day.

The questionnaire was not anonymous (which may lower response rates), but did enable us to send reminder letters. It is also possible that doctors provided us with the answers that they thought we wanted to hear, rather than reflecting their practice. If

this is indeed what doctors think is correct, then it is a problem.

Unfortunately, the number of doctors who answered each questionnaire was small, meaning that the power to detect differences was low, especially in the subgroup analysis. The two groups of respondents were very similar based on the characteristics we compared. Yet, because the answers came from two different questionnaires, the two sets of replies could not be cross-tabulated.

The sampling included only non-specialist doctors and family physicians working in private practice, and not those in public clinics who provide 15% of ambulatory care following Department of Health policies.

Specialists also provide much primary medical care, and private gynaecologists in particular often provide unreferred care for women. Their opinions were sought in a later part of the study.

**Implications**

Cervical cancer is the sixth most common malignancy affecting women in Hong Kong: the lifetime probability of developing the disease is 1 in 72 (1.4%).<sup>12</sup> The risk does not rise substantially until the age of 35 years and reaches a peak at the age of 75 years (Fig).<sup>12</sup> Women who have never been sexually active are said to be at very low risk, whereas those who have had a hysterectomy for other diseases are no longer at risk. From the 1994 territory-wide audit of gynaecological surgery in Hong Kong,<sup>13</sup> it seems that about 15% of women have hysterectomies, which would mostly occur before the age of 55 years. The greatest risk for cervical cancer occurs

after this age. Thus, the remaining at-risk women with an intact uterus will have a somewhat higher lifetime risk, possibly about 1 in 50 (2%). Many doctors encourage women to start having cervical smears from the age of first sexual activity, usually in their teens or early twenties, at a time when the risk is very low. Most recommendations are to stop regular smears at the age of 70 years, since invasive cancer is unlikely to develop in women who have had no precancerous lesions before this time. Thus, over her lifetime, a woman would have 40 to 50 annual cervical smears.

Cervical smears are a successful screening method because most squamous cervical tumours grow relatively slowly, giving time for repeated tests to detect them, even at 2- or 3-yearly intervals and with tests that have less than perfect sensitivity. It has long been shown that a programme of less frequent smears is only marginally less effective and carries a much lower risk of false-positive results. There is good evidence that a yearly screening interval is likely to reduce the incidence of invasive cancer by 93.5%, whereas a 3-yearly screening interval will reduce it by 90.8%.<sup>14</sup> Using 5-yearly smears for women aged between 30 and 60 years, Finland has reduced the incidence of cervical cancer by nearly 90%.<sup>15</sup> Recently, the United Kingdom has also produced substantial falls by focusing on population coverage, with 3-yearly recalls.<sup>16</sup> Hence, most international expert bodies, including the Hong Kong Department of Health and now the Hong Kong College of Obstetricians and Gynaecologists, recommend 3-yearly smears. This notwithstanding, it seems from our survey that many local private primary care doctors still encourage annual cervical

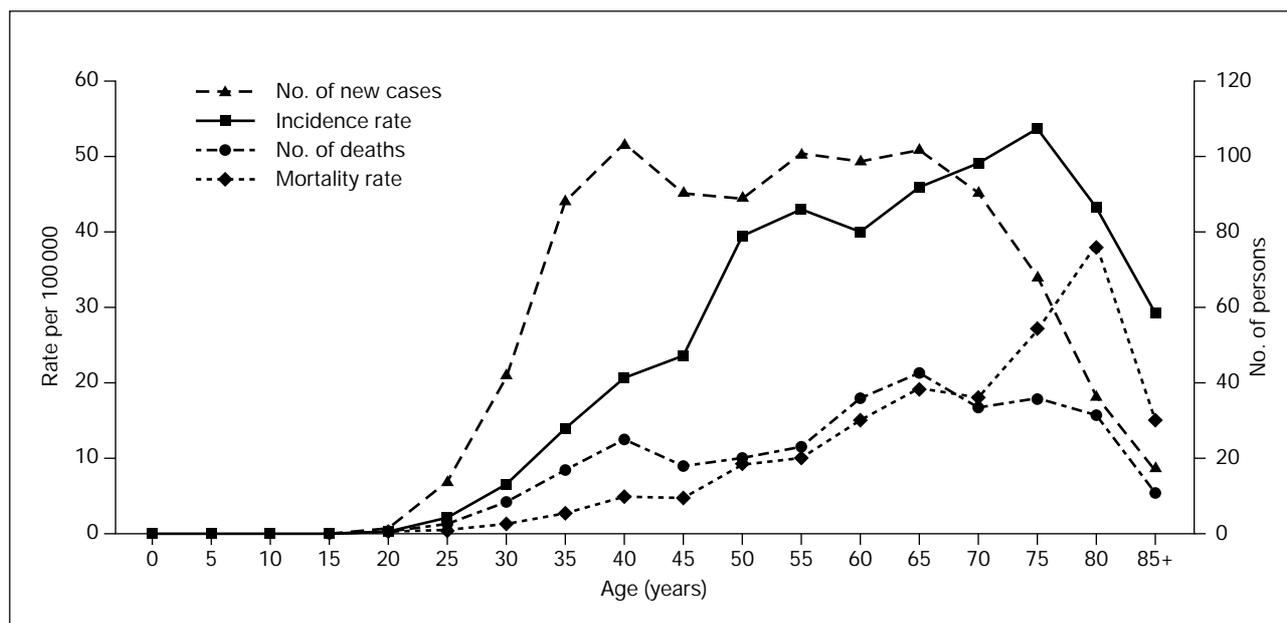


Fig. Age-specific incidence, mortality, new cases and deaths, cervix uteri—females (1995-1996)<sup>12</sup>

**Table 6. Number of smears in a lifetime, with different screening intervals (screening from age of 30 to 69 years) and numbers needed to prevent one invasive cancer**

Interval	Lifetime no. of smears	Mean no. of colposcopies*	Reduction in cancer risk <sup>14</sup>	Remaining lifetime cancer risk (per 1000) <sup>†</sup>	NNP <sup>‡</sup>	
					Over lifetime <sup>§</sup>	Each smear <sup>  </sup>
6-monthly	80.0	4.0	—	—	—	—
1-yearly	40.0	2.0	0.935	1.3	53.5	2139
2-yearly	20.0	1.0	0.925	1.5	54.1	1081
3-yearly	13.3	0.7	0.908	1.8	55.1	732
5-yearly	8.0	0.4	0.836	3.3	59.8	478
10-yearly	4.0	0.2	0.641	7.2	78.0	312
None	0.0	0.0	0.000	20.0	—	—

\* Assuming 5% abnormalities detected in smears; colposcopy recommended

† Baseline lifetime cancer risk assumed to be 1 in 50 (2%). Remaining lifetime cancer risk = baseline risk x (100 - reduction)

‡ NNP No. needed to prevent one invasive cancer

§ NNP (over lifetime) = number of women required to be screened for a lifetime in order to prevent one cancer = 1/(lifetime risk x risk reduction), eg 1/(0.02 x 0.836) = 59.8

|| NNP (each smear) = number of smears required in order to prevent one cancer = no. of smears/(lifetime risk x risk reduction), eg 8/(0.02 x 0.836) = 478

smears. Similarly, a telephone survey by Chang and Hazlett<sup>3</sup> found that 65% of Hong Kong women who have smears have them annually.

Table 6 presents calculations of the number of smears performed under different screening intervals, and the likely consequences for the women participating. There is a 2% to 8% chance of having an abnormal result on initial screening and about 5% of women will require colposcopy to exclude cancer. The table thus shows the likely number of colposcopies a woman might have in a lifetime according to smear frequency. The decreased cancer risk according to screening interval is displayed, followed by the remaining cancer risk assuming that women in Hong Kong have a lifetime cancer risk of about 1 in 50 (2%). Increasing the screening interval from once a year to once every 3 years results in one third as many smears (with their attendant risk of a false-positive result), whereas the lifetime risk of cancer going undetected increases by 5.4 per 1000 (0.54%). Since cervical carcinoma in situ development is slow, most missed early cancers will be detected at the next occasion, while they are still easily treatable.

In Table 6, the chance of benefit is listed in the last two columns, expressed as the number needed to prevent one invasive cancer (NNP). The second last column shows the number of women needed to be screened over a lifetime at the indicated interval in order to prevent one invasive cancer, whereas the last column shows the number of smears that must be performed at that interval in order to prevent one invasive cancer. Figures in these columns represent 40-year means (screening from age of 30-69 years) because the lower incidence of cervical cancer at younger ages results in a higher NNP whereas, conversely, the higher incidence of cervical cancer at

older ages results in a lower NNP.<sup>17</sup> The colposcopy rate is dependent on the abnormality detection rate of the laboratories; if they recommend colposcopy for 10% of smears, the number performed would double.

The physical risks of treating minor cervical abnormalities are small and relatively uncommon (bleeding, infections, cervical stenosis), but can amount to a problem if many women are treated. In addition, there is the psychological cost to the woman of being told about an abnormality that could lead to cancer. Moreover, if she utilises the private sector, she must pay for the cost of the colposcopy and for any further treatment, even for minor abnormalities. Reducing the screening interval to 6 months, as recommended by a few doctors, is unlikely to increase the true detection rate by very much, but would further double the chance of false-positive results. Such a risk is not worthwhile without substantial benefit.

Studies from other countries have shown repeatedly that reduced mortality due to cervical cancer comes from increasing the proportion of susceptible women who have tests, rather than repeated testing of those women who already participate in screening programmes.<sup>8</sup> Thus, Hong Kong must enrol more women to testing. This may be aided by educating doctors and women alike about longer screening intervals. To ensure women will remember to go for Papanicolaou tests at longer than yearly intervals will require using reminder systems such as that developed by the Hong Kong Cancer Society.<sup>18</sup>

Doctors in private primary care practice should discuss cervical smear screening with women who are at risk, but have never had a smear, or not had one for a long time. Doctors who do Papanicolaou tests should inform their patients that this service is available and

encourage their participation. Those who do not perform Papanicolaou tests should inform their patients where they can obtain such screening, although this may be difficult given that there are insufficient public clinics available, and they are not conveniently located for all women. It is not practical to create enough new Family Planning Association clinics or women's health centres to cater for the whole population. Rather, to reduce the dropout effect from women failing to follow through the referral, more private primary care doctors should undertake smears themselves. It may be worthwhile providing a skills course for those who need it. The reasons for not doing smears need to be explored and resolved. After all, if doctors are unwilling to do cervical smears—one of the simplest gynaecological procedures—it is unlikely that they will do any other gynaecological examinations either, and thereby cannot provide whole-person care for women.

Perhaps women could be encouraged to make better use of the private primary care system for Papanicolaou tests by some form of subsidy. For example, every woman might be entitled to a partial rebate on pathology or doctor's consultation fee once every 3 years. In this way, they would get not only a Papanicolaou test, but also the opportunity to develop a relationship with a particular doctor who could then deliver the required whole-person care. If doctors themselves do not provide enough services, such a scheme could be extended to nurse practitioners working either in special clinics or with doctors.

## Conclusion

A large majority of Hong Kong primary care doctors still think that cervical smears should be performed annually, but only about half provide this service. This will result in many women having investigation and treatments, whereas many others will not be tested. Programmes to help primary care doctors understand and perform this test, to make it more readily available but at longer intervals, would likely provide a substantial reduction in the incidence of this preventable disease.

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