Research Article

The Role of Hospitals in Cervical Cancer Prevention

Peran Rumah Sakit dalam Pencegahan Kanker Serviks

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Abstract

Objective: To evaluate the role of hospitals in DKI Jakarta on primary and secondary cervical cancer prevention.

Method: This was a survey conducted to 25 hospitals, chosen with simple random sampling from 109 hospitals in DKI Jakarta. Questionnaire used for interview contained statements regarding knowledge, attitude and behavior of 117 health care professionals along with identification of facility preparedness for cervical cancer prevention within those 25 hospitals.

Result: The assessment of knowledge shows that all health care professionals (100%) knew that HPV vaccination is used as a primary prevention for cervical cancer. About 98.3% respondent knew HPV vaccine injected intramuscularly. As much as 91.5% of the respondent knew HPV vaccine is given three times either at month 0, 1, 6 or at month 0, 2, 6. About 71.8% respondent knew deltoid as site for vaccine injection.
Most of health care professionals (99.1%) knew VIA (visual inspection with acetic acid) can be used for early detection of cervical cancer. About 76.9% respondent knew how to interpret positive VIA results and 60.7% respondent knew how to do VIA test. As much as 93.2% health care professional knew the purpose of Pap test and about 82.1% knew how to do it. From attitude aspect, most of health care professionals (96.6%) agreed in giving HPV vaccination. About 94% of them agreed to do VIA test and about 98.3% agreed in conducting Pap test. From behavioral aspect, most of the respondent (76.9%) offered HPV vaccination to their clients/patients and 62.4% respondent did HPV vaccination. VIA test was offered and conducted by 52.1% and 30.8% of them, respectively. About 86.3% respondent offered Pap test and 71.8% did the Pap test. As many as 75% of female health care professionals who meet the qualification already had a Pap test for themselves, but only 32.5% ever been vaccinated for HPV.
From facility aspect, twenty hospitals (80%) in DKI Jakarta offered HPV vaccination with Pap test can be done in all of them. VIA test and colposcopy were only available in eleven (44%) and ten (40%) hospitals respectively.

Conclusion: Most hospitals in DKI Jakarta have health care professionals with good knowledge and attitude in cervical cancer prevention. However, not many have shown expected behavior in the primary prevention. Most hospitals in DKI Jakarta provide facilities for HPV vaccination and Pap test, but only few have VIA facilities and colposcopy.

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Keywords: cervical cancer prevention, health care professional, hospital

Abstrak

***Tujuan**: Mengetahui peran rumah sakit di DKI Jakarta dalam pencegahan primer dan sekunder kanker serviks.*

***Metode**: Penelitian ini adalah survei yang dilakukan pada 25 rumah sakit yang dipilih secara simple random sampling dari 109 rumah sakit yang ada di DKI Jakarta. Dilakukan wawancara menggunakan kuesioner yang berisi pertanyaan mengenai aspek pengetahuan, sikap dan perilaku terhadap 117 tenaga kesehatan serta identifikasi kesiapan fasilitas terkait pencegahan kanker serviks pada 25 rumah sakit tersebut.*

***Hasil**: Dari aspek pengetahuan penelitian ini menunjukkan bahwa semua tenaga kesehatan (100%) mengetahui bahwa vaksinasi HPV dilakukan sebagai pencegahan primer kanker serviks, 98,3% mengetahui bahwa vaksin HPV disuntikkan intra muskular, 91,5% mengetahui bahwa vaksinasi HPV diberikan 3x yaitu pada bulan ke 0, 1, 6 atau 0, 2, 6, dan 71,8% mengetahui bahwa vaksin HPV disuntikkan pada deltoid.*
Sebagian besar tenaga kesehatan (99,1%) mengetahui bahwa tes IVA (Inspeksi Visual dengan Aplikasi Asam Asetat) dapat digunakan untuk deteksi dini kanker serviks, 76,9% mengetahui cara menginterpretasi hasil tes IVA yang positif, dan 60,7% tahu bagaimana cara melakukan tes IVA. Sebanyak 93,2% tenaga kesehatan mengetahui tujuan tes pap dan 82,1% mengetahui bagaimana cara melakukan tes pap. Dari aspek sikap, sebagian besar tenaga kesehatan (96,6%) setuju untuk memberikan vaksinasi HPV, 94% setuju untuk melakukan tes IVA dan 98,3% setuju untuk melakukan tes pap. Dari aspek perilaku, sebagian besar tenaga kesehatan (76,9%) menawarkan pada klien/pasiennya vaksinasi HPV dan 62,4% pernah melakukan vaksinasi HPV, 52,1% menawarkan dan 30,8% pernah melakukan pemeriksaan IVA serta 86,3% menawarkan dan 71,8% melakukan tes pap. Sebagian besar tenaga kesehatan perempuan yang sesuai dengan persyaratan (75%) sudah melakukan tes pap bagi dirinya sendiri, tetapi hanya 32,5% yang sudah mendapatkan vaksinasi HPV.
Dari segi fasilitas, 20 rumah sakit (80%) di DKI Jakarta menyediakan vaksinasi HPV, dan semua (100%) rumah sakit menyediakan tes pap. Hanya 11 rumah sakit (44%) yang menyediakan tes IVA dan 10 rumah sakit (40%) yang menyediakan kolposkopi.

***Kesimpulan**: Sebagian besar rumah sakit di DKI Jakarta sudah mempunyai tenaga kesehatan dengan pengetahuan dan sikap yang baik dalam pencegahan kanker serviks, namun dari aspek perilaku sebagian besar belum menunjukkan perilaku yang baik dalam pencegahan primer kanker serviks. Sebagian besar rumah sakit di DKI Jakarta sudah menyediakan fasilitas pelayanan vaksinasi HPV dan tes pap, namun sebagian besar belum menyediakan fasilitas IVA dan kolposkopi.*

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***Kata kunci**: pencegahan kanker serviks, rumah sakit, tenaga kesehatan*

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INTRODUCTION

Cervical cancer is the number two cancer most often found in women worldwide,[1-5] and is the number two cause of death caused by cancer.[6-8] Based on data from GLOBOCAN 2002, Indonesia ranks as the second highest in the world after China for cervical cancer cases. As many as 15,050 cases was found with 7566 deaths. Every day, it is estimated that there are 41 new cases of cervical cancer and 20 women died due to cervical cancer.[7] The mortality remains high since 90% of cases diagnosed at an advanced stage.[9]

The problems caused by cervical cancer become tremendous, therefore the cervical cancer prevention, since cervical cancer can be prevented,[3,10] should be done thoroughly and integrated. There are three ways to prevent cervical cancer, ie primary prevention, secondary, and tertiary. Primary prevention can be done by giving an education of the risk factors and getting HPV vaccination, secondary prevention can be done by cervical cancer screening and proper treatment for positive screening result cases, while tertiary prevention is done by treating cervical cancer as early as possible to avoid the complications.

Hospital has an important role in the prevention of cervical cancer, both in primary prevention (HPV vaccination) and secondary prevention (screening and treatment of positive screening result). If the role can be run well by most hospitals in Indonesia, the incidence and morbidity due to cervical cancer can be decreased. Unfortunately, there has been no research conducted on the hospital's role in the prevention of cervical cancer. Therefore, research is needed to determine the role of hospitals in the cervical cancer prevention.

The objective of this study is to determine the readiness of health workers (knowledge, attitude and behavior of midwives, general practitioners (GPs) and obstetricians) in hospital in Jakarta in primary and secondary prevention of cervical cancer, determine the readiness of hospital facilities in Jakarta in HPV vaccination services, determine readiness of hospital facilities in Jakarta in cervical cancer screening services, particularly the VIA test, Pap test and HPV tests, as well as knowing the readiness of hospital facilities in Jakarta in delivering cases with a positive screening result.

METHOD

This study is a survey conducted in 25 hospitals selected by simple random sampling of 109 hospitals in Jakarta, both private and government, from March 2012 until July 2012.

At each hospital selected, set 7 respondents in each hospital, consist of 1 managerial member, 2 obstetricians, 2 general practitioners and 2 midwives working in the polyclinic. Interviews were conducted using a questionnaire about aspects of knowledge, attitudes and behaviors of health workers on primary and secondary prevention of cervical cancer, instead of observation made in the polyclinic where they work. Observations were also carried out in the waiting room. The data collection was also performed at pharmacies and pathology anatomy. Data processing was performed using SPSS (Statistic Program for Social Status).

RESULT

By the simple random sampling, 25 of 109 hospitals were chosen. There were 8 government hospitals and 17 private hospitals (3 type A hospitals, 6 type B hospitals and 16 type C hospitals), have been studied. There were eight hospitals which all of the proposed health care workers completely interviewed. Unfortunately only less than 6 workers were interviewed in 3 hospitals that have complete proposed health care worker since the respondent was difficult to interview. In 14 hospitals, general practitioners were not interviewed since they did not work in the polyclinic.

A total of 117 health workers were interviewed, consists of 49 (42%) midwives, 21 (18%) general practitioners, and 47 (40%) obstetricians. Most of respondents (69%) were female. Thirty seven people are the lecturer (32%).

The most frequent attended course was the Pap test, followed by 59% health workers. HPV test was the least attended course, only 35.9% of the subjects. Obstetricians were always of the highest percentages in course attending. The general practitioners held the lowest attendance. They also held the lowest attendance in HPV test and VIA test courses attendance. Only a small proportion of midwives had HPV test courses. Colposcopy training were followed by 70.2% obstetrician.

In term of knowledge, all health workers knew that HPV vaccination done as primary prevention

of cervical cancer. A total of 98.3% of health workers knew that the HPV vaccine is injected intramuscularly, 91.5% knew that HPV vaccination is given 3 times, ie at month 0, 1, 6 or 0, 2, 6, and 71.8% knew that the HPV vaccine is injected in the deltoid.

A total of 93.2% health workers knew that the VIA test used for early detection of cervical cancer, 76.9% knew how to interpret the VIA test results and 60.7% knew the steps of VIA test.

A total of 93.2% of health workers knew the main purpose of Pap test and 82.1% knew the steps of Pap test.

Most of the health workers (76.9%) knew that HPV test is not routinely performed on women aged less than 30 years old, 86.3% knew that HPV test should be performed in women aged 30 years or more, but only 36.8% knew the steps of HPV test.

Table 1. Knowledge of Health Workers in Hospitals Jakarta in 2012 on Primary and Secondary Cervical Cancer Prevention.

Health workers have the right knowledge:	Type of health workers							
	Midwives		GPs		Obstetrician		Total	
	n=49	%	n=21	%	n=47	%	n=117	%
That HPV vaccination done as primary prevention of cervical cancer	49	100.0	21	100.0	47	100.0	117	100.0
That the HPV vaccine is injected intramuscularly	48	98.0	20	95.2	47	100.0	115	98.3
That HPV vaccination is given 3 times, ie at month 0, 1, 6 or 0, 2, 6	44	89.8	19	90.5	44	93.6	107	91.5
That the HPV vaccine is injected in deltoid	26	53.1	14	66.7	44	93.6	84	71.8
That VIA test is used for early detection of cervical cancer	49	100.0	20	95.2	47	100.0	116	99.1
That the VIA positive test results is apparently a white plaque on the transformation zone	34	69.4	14	66.7	42	89.4	90	76.9
On VIA test steps	26	53.1	4	19.0	41	87.2	71	60.7
That the main objective of Pap test is the early detection of cervical cancer	43	87.8	21	100.0	45	95.7	109	93.2
On Pap test steps	39	79.6	11	52.4	46	97.9	96	82.1
That HPV test is not routinely performed on women aged less than 30 years	42	85.7	9	42.9	39	83.0	90	76.9
That HPV test should be performed in women aged 30 years or more	46	93.9	15	71.4	40	85.1	101	86.3
On HPV test steps	7	14.3	1	4.8	35	74.5	43	36.8

Table 2. Attitude of Health Workers in Hospitals Jakarta in 2012 on Primary and Secondary Cervical Cancer Prevention.

Health workers agreed that:	Type of health workers							
	Midwives		GPs		Obstetrician		Total	
	n=49	%	n=21	%	n=47	%	n=117	%
As health workers they should be able to perform a speculum examination in women who are already married.	47	95.90	20	95.2	-	-	73	95.7
All of the women aged 30-50 years who have had sexual intercourse should be performed cervical cancer screening.	49	100.0	21	100.0	47	100.0	117	100.0
As health workers they could give HPV vaccination.	47	95.9	19	90.5	47	100.0	113	96.6
As health workers they could do VIA test.	45	91.8	19	90.5	46	97.9	110	94.0
As health workers they could do Pap test.	48	98	20	95.2	47	100.0	115	98.3
As health workers they could do HPV test.	42	85.7	20	95.2	45	95.7	107	91.5
As health workers they agreed to refer to obstetrician or suggest colposcopy in cases of positive screening results.	49	100.0	21	100.0	-	-	70	100.0
As obstetricians they can perform colposcopy.	-	-	-	-	47	100.0	47	100.0
As obstetrician will perform colposcopy examination in cases of cervical cancer screening results indicate precancerous lesions.	-	-	-	-	34	72.3	34	72.3

Table 3. Health Workers' Behavior in DKI Jakarta Hospitals in 2012 on Offering and Performing Primary and Secondary Cervical Cancer Prevention to their Patients.

Subject as healthworker:	Type of health workers							
	Midwives		General Practitioner		Obstetrician		Total	
	n=49	%	n=21	%	n=47	%	n=117	%
Offering patients to perform HPV vaccination	39	79.6	18	85.7	33	70.2	90	76.9
Injecting the HPV vaccine to patients	27	55.1	7	33.3	39	83.0	73	62.4
Offering patients to conduct VIA test	24	49.0	8	38.1	29	61.7	61	52.1
Conducting VIA test to patients	12	24.5	2	9.5	22	46.8	36	30.8
Offering patients to perform Pap test	37	75.5	18	85.7	46	97.9	101	86.3
Conducting a Pap test to patients	33	67.3	5	23.8	46	97.9	84	71.8
Offering patients to conduct HPV test	17	34.7	8	38.1	28	59.6	53	45.3
Performing HPV test to patients	8	16.3	1	4.8	21	44.7	30	25.7

In term of attitude, most of health workers (95.7%) agreed that they should be able to perform a speculum examination in women who are married, and 100% agreed that all women aged 30-50 years who have had sexual intercourse should be performed cervical cancer screening. The majority of workers (96.6%) also agreed that they as health workers could do HPV vaccination, 94% agreed to conduct the VIA test, 98.3% agreed to do the Pap test, and 91.5% agreed to do the HPV test.

All midwives and general practitioners agreed that they would refer to obstetrician or suggest colposcopy in cases of positive screening results. All obstetrician agreed that they can do colposcopy, and 72.3% agreed that they will perform colposcopy in cases of cervical cancer screening results indicate precancerous lesions.

In terms of behavior, most of health workers (76.9%) offered to the patient an HPV vaccination and 62.4% given vaccination against HPV, 52.1% offered and 30.8% did VIA test and 86.3% offered and 71.8% performed Pap test. Only 45.3% and 25.7% of health workers offered and performed HPV test respectively. The majority of female health workers who fullfilled the requirements (75%) already did Pap test for themselves, but only 5.4% had HPV test and only 32.5% of health workers had received HPV vaccination.

The two most frequent reasons of the health workers for not performing HPV vaccination for themselves nor for their wives/mothers were their feeling to have a low risk (32.0%) and no fund (15.8%). While the two most frequent reasons for not performing Pap test were also their feeling to have a low risk (23.8%), and had no time (23.8%). Regarding the reasons why health workers or their wives/mothers did not perform HPV test, 18.1% expressed a negative Pap test results and 16.9% stated as low risk.

Regarding hospital facilities in Jakarta in the prevention of cervical cancer, total of 20 (80%) of Jakarta hospitals consist of 6 government and 14 private hospitals providing HPV vaccination. A type C private hospital had the highest number in HPV vaccine usage (40 vaccines per month). In terms of providing promotion media for HPV vaccination, only 11 hospitals in Jakarta that put up banners HPV, 10 hospitals that provide HPV vaccination leaflet in the obstetrician practice room, and 5 hospitals that provide posters in the waiting room. A total of 15 hospitals had given counseling about HPV vaccination. Only 8 hospitals stated providing discounts for HPV vaccination for their employees.

Only 11 from 25 hospitals surveyed provide VIA test facility. The number of VIA test examination at the hospital was unknown, because of no record. In terms of VIA test publication, only 8 hospitals provided a banner, 3 hospitals provided leaflets in obstetrician practice room, 2 hospitals provided poster in the waiting room and 9 hospitals did counseling. Only 8 hospitals who claimed to give discount/free for VIA tests for their employees, and only 6 hospitals provide a discount/free for the public.

All Jakarta hospitals that were surveyed provided Pap test. A total of 11 hospitals had Pap test samples over than 30 monthly. A type C private hospital had the highest sample of Pap test examination(130 samples per month). Only 11 hospitals put up banners on Pap test, 3 hospitals provided Pap test leaflet/poster in obstetrician practice room, and 5 hospitals provided leaflet in the waiting room. Eighteen hospitals claimed that they had done a Pap test counseling. Only 12 hospitals gave Pap test discounts for their employees, and only 6 that gave discounts for the public.

There are 7 hospitals provide thin-prep facility. A type B private hospital had the highest number of thin prep samples (50 samples per month). Only 1 hospital in Jakarta provide thin prep leaflets in obstetrician practice room and 2 hospitals provide thin-prep poster in the waiting room.

Only 6 hospitals provided HPV test, all of them were private ones. A type B private hospital had the highest samples of HPV test, which was 9 samples per month. Only 3 hospitals put up HPV test banners, 7 hospitals had done HPV test counseling, and 2 hospitals provided HPV test leaflets in obstetrician practice room as well as in the waiting room. No hospital provided discount on HPV test for hospital employees, but there was 1 hospital which gave discount for the public.

Ten hospitals, consists of two government and 8 private ones, provided colposcopy. There were 11 hospitals that had minimum one obstetrician who already got courses on colposcopy. Only a small number of obstetricians that worked in 8 hospitals admit that they had performed a colposcopy examination.

DISCUSSION

Most health professionals did not know the steps of HPV test. This might be due to only a few (35.9%) of them had attended HPV test course. It might also be due to only a few hospitals (35%) provide HPV test. In addition, the HPV test is relatively new compared to Pap test, making it less popular than the Pap test.[1]

Most health professionals had a good attitude about cervical cancer prevention. All of them agreed that all women aged 30-50 years who have had sexual intercourse should have cervical cancer screening. Previous study conducted on midwives and general practitioners in primary health service also acquired the same result, that is most midwives and general practitioners agreed that every married/sexually active woman should be performed speculum examination, and that general practitioners and midwives should perform cervical cancer screening.[11]

Many health workers did not perform VIA test and HPV test to their patients. HPV DNA test remains to be done despite the Pap test, because HPV test is more sensitive than cytology in detecting NIS 2/3 (90% sensitivity), negative predictive value of HPV test is very high (99%), specificity of the HPV test is moderate (specificity 85%), the combination of HPV DNA and cytology test will increase the sensitivity of Pap test, from 50-85% into almost 100% and the combination of HPV DNA test and cytology for age> 30 years would be cost effective and it does not require annual screening if both tests are negative and there is not change in sexual partner.[12,13]

Many health workers did not perform VIA test, this might be due to the fact that only 11 hospitals provide facilities for VIA test. Many health workers did not do HPV test and this might be due to the low level of HPV test knowledge; only 36.8% of health workers knew the steps of HPV test. This also might be due to HPV test facilities provided by the hospitals, which is only 6 hospitals provide HPV test, and the expensiveness of the test.

Many health workers did not perform HPV vaccination and HPV test, whether to themselves nor their family (wives/mother). The two most common reasons for not getting HPV vaccination is the belief that their risks are low (32%) and no funding (15.8%). Ten midwives and 2 general practitioners stated that they do not have the funding for HPV vaccination. Based on the information obtained from several hospitals and laboratories, it was revealed that the cost of 1 HPV vaccination injection ranged from Rp 750,000 to Rp 1,200,000, hence 3x injections will cost Rp 2,200,000 to Rp 3,600,000, while HPV test ranged from Rp 493,000 to Rp 900,000.

The two major reasons that HPV test was not done was because of a negative Pap test results (18.1%) and the belief of having a low risk (16.9%).

Eventhough 80% of hospitals in Jakarta provided HPV vaccine, only 75% of that hospitals use the vaccine. The lack of health promotion (by pos-

ter/leaflet or counseling) of HPV vaccination provided by the hospitals could be the cause.

The high price of HPV vaccine could also affect the lack of HPV vaccine usage in hospital and also affect the availability of special (reduced) price in the hospitals for the staff or community. The immunization coverage rate in the U.S. for adolescents is lower than the coverage for vaccination in children.

Only 49% of young women had HPV vaccination in 2010. Obstacles to achieve vaccination coverage are multifactorial, which include lack of knowledge about vaccines and the diseases that can be prevented by a vaccine, infrastructure issues, financial issues, and the behavior of teenagers, parents and providers to vaccination. Several studies have also reported that the behavior of providers and parents can be modified to increase the public's willingness to vaccinate.[14]

HPV vaccination, although expensive, remains to be done because HPV vaccination can prevent cervical cancer when given to women who have not been exposed to HPV[15] virus so it can reduce cervical cancer morbidity and mortality.

It is a concern to conduct cooperation among government, world donor organizations, experts and pharmaceutical professions for fascilitating and providing more affordable HPV vaccine for community.

Only a few hospitals in Jakarta provided VIA and HPV tests, and fewer published the screening methods, either in the form of the provision of leaflets/posters, banner installation, or in conducting counseling. In fact, information and education to the community is important. It will make women have the willingness to participate in screening services, hence the objectives of cervical cancer prevention program will be achieved. Providing information and education to the community should be implemented in the community, health facilities, and through various media. Network must be created between health facilities and community.[1]

All hospitals in this survey provided Pap test. There were 11 (44%) hospitals that have 30 Pap test sample in a month. The availability of Pap test facility, was one of the factor that contribute for the successfulness of cervical cancer prevention.[1]

Only 40% hospitals in Jakarta provide colposcopy. In fact, colposcopy services should be available to evaluate suspicious invasive lesions.

The availability of trained staff, good equipment and supply, are key factors for implementing effective cervical cancer prevention program.[1]

CONCLUSION

Most hospitals in Jakarta had health workers with good knowledge and attitude on cervical cancer prevention, but only a small percentage had a good behavior on primary cervical cancer prevention. Most hospitals in Jakarta provided HPV vaccination and Pap test, but most did not provide VIA, HPV test, and colposcopy facilities. Further research is needed to examine the cause of lack good behavior in providing HPV vaccination. It is important to implement complete facilities in the hospital in Jakarta especially for VIA test and colposcopy facilities.

REFERENCES

1. Jacob M, Mahe C, Luciani S, Tabbutt J. Planning and implementing cervical cancer prevention and control programs: A Manual for Managers. Seattle: ACCP; 2004.
2. Department of Health, Government of the Hong Kong, Special Administrative Region. Prevention and screening of cervical cancer. Topical health no. 4. Hong Kong: Government of the Hong Kong Special Administrative Region, 2004.
3. Fule T. Human papillomavirus in cervical cancer and in peritumoral tissues. Semmelweis University, 2005.
4. Trottier H, Franco EL. Human Papillomavirus and Cervical Cancer: Burden of Illness and Basis for Prevention. Am J Manag Care 2006; 12: 462-9.
5. Chia KS, Seow A, Lee HP, Shanmugaratnam K. Cancer Incidence in Singapore 1993-1997, Singapore Cancer Registry Report No. 5, Singapore Cancer Registry. 2000.
6. Piyathilake CJ, Henao OL, Macaluso M, et al. Folate is associated with the natural history of high risk human papillomavirus. Cancer Res 2004: 8788-93.
7. Program for Appropriate Technology in Health (PATH). Planning appropriate cervical cancer prevention programs. 2nd ed. Seattle: PATH, 2000.
8. Collins Y, Einstein MH, Gostout BS, et al. Cervical cancer prevention in the era of prophylactic vaccines: a preview for gynecologic oncologists. Science Direct Gynecol Oncol 2006: 552-62.
9. I Ketut S. Tes human papillomavirus sebagai skrining alternatif kanker serviks. Cermin Dunia Kedokteran 2006; 151: 29-32.
10. Alliance for Cervical Cancer Prevention (ACCP). The case for investing in cervical cancer prevention. Cervical cancer prevention issues in depth, no. 3. Seattle: ACCP; 2004.
11. Mayasari, KP. Pengetahuan, sikap dan perilaku bidan dan dokter umum dalam pencegahan kanker serviks di pelayanan kesehatan primer di DKI Jakarta dan faktor-faktor yang mempengaruhinya. Tesis. 2011.

12. Denny L. Cost effectiveness of HPV DNA testing, 2012.
13. McGraw-Hill. Willams Gynecology. Chapter 29: preinvasive lesions of the lower genital tract, 2008.
14. Gowda C, Schaffer DS, Dombkowski KJ, Dempsey AF. Understanding attitudes toward adolescent vaccination and the decision-making dynamic among adolescents, parents and providers. BMC Public Health 2012, 12: 509.
15. Gardasil Q & A for public. CDC 2010.