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Distribution: General

Strategy to Prevent Cervical Cancer

*Report of a Bi-Regional Consultation
Pattaya, Thailand, 11–13 April 2007*



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Abbreviations and acronyms

ACCP	Alliance for Cervical Cancer Prevention
AMC	advanced market commitment
AOGIN	Asia-Oceania Research on Genital Infections and Neoplasia
CECAP	Cervical Cancer Prevention Programme
CIN	cervical intraepithelial neoplasia
DNA	Deoxyribonucleic acid
FDA	Food and Drug Administration
GAVI	Global Alliance for Vaccines and Immunizations
HIV	Human immunodeficiency virus
HPV	Human papillomavirus
IAEA	International Atomic Energy Association
IARC	International Agency for Research on Cancer
ICO	Institut Català d'Oncologia
LBC	Liquid-based cytology
LEEP	Loop electrosurgical excision procedure
MOPH	Ministry of Public Health
NCCP	National Cancer Control Programme
NCD	noncommunicable diseases
NGO	nongovernmental organization
PACT	Programme of Action on Cancer Therapy
Pap smear	papanicolaou smear
PDZ	Post-synaptic density protein
SAFE	safety, acceptability, feasibility and programme effort
SEAR	South-East Asia Region
SEARO	South-East Asia Regional Office of the World Health Organization
STD	sexually transmitted disease
SVA	single-visit approach to cervical cancer prevention

QALY	quality of life year saved
UICC	International Union for Cancer Control
UNFPA	United Nations Population Fund
VIA	Visual inspection with acetic acid
WHO	World Health Organization
WPRO	Western Pacific Regional Office of the World Health Organization
YLS	year of life saved (or life-year saved)

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Executive summary

This document reports a consultation that was jointly conducted by the World Health Organization's (WHO) Regional Offices South-East Asia (SEARO) and the Western Pacific (WPRO) in collaboration with WHO Headquarters, UNFPA and AusAID. Representatives from 17 Member countries and several partner organizations discussed the current status of cervical cancer prevention efforts in countries, ways to bolster these efforts, and if the HPV vaccine can be introduced, and the ways in which the partners can provide support to achieve country goals. The main objective of this consultation was to assist countries in informed decision making on prevention of cervical cancer.

Experts presented their views and perspectives on the epidemiology of cervical cancer and Human papillomavirus (HPV), approaches to screening and treatment and how cervical cancer prevention programmes are operating at the country level. In addition to this, participants shared experiences and lessons learned in implementing cervical cancer prevention programmes with representatives from other countries and developed action steps for strengthening cervical cancer prevention programmes within their own countries.

The meeting generated enthusiasm about the potential of HPV vaccines to combat cervical cancer. However, participants also realized that challenges for the efficacy of prevention programmes must be resolved before this vaccine can be introduced in their countries.

At the conclusion of the meeting, country teams observed that they were better prepared to work with key decision-makers and other stakeholders in their respective countries to identify priorities and work on implementing some of the proposed actions leading towards a comprehensive national approach to preventing cervical cancer. This may be achieved with support from WHO, international donors, and technical assistance agencies.

1. Introduction and background information

1.1 Overview

Inaugurating the consultation, Dr P.T. Jayawickramarajah, WHO Representative to Thailand, delivered the opening remarks on behalf of the WHO Regional Director for South East Asia, Dr Samlee Plianbangchang. He pointed out that cancer of the cervix is the second most commonly occurring cancer in women worldwide, accounting for about 500 000 new cases and more than 250 000 deaths each year. It disproportionately affects the poorest and most vulnerable women. At least 80% of cases occur in developing countries, where cervical cancer is the most common form of cancer in women.

He also stated that almost all cases of cervical cancer (99%) are linked to genital infection with HPV, which is the most common viral infection of the reproductive tract. The peak incidence of HPV infection occurs between the ages of 16 to 20 years, soon after the onset of sexual activity. Although the infection usually resolves spontaneously, it may be followed by precancerous lesions. The lesions may gradually progress to cervical cancer over a period of 20-30 years. Screening for early detection of these changes is currently an effective strategy for prevention of cervical cancer.

1.2 Rationale for convening consultation

The issue of cervical cancer has been addressed by WHO and its Member States, leading to the adoption of a resolution on cancer prevention and control (Resolution WHA58.22) during the Fifty-eighth World Health Assembly in 2005. The resolution calls for a comprehensive approach to the prevention of cervical cancer incorporating primary prevention to early detection, treatment and palliative care. It urges Member States to pay particular attention in their cancer control planning to cancers for which avoidable exposure is a factor, particularly exposure to certain infectious agents. It also requests the WHO Director-General, "to promote research on the development of an effective vaccine against cervical cancer". In this context, the Western Pacific and South-East Asia regional offices convened a meeting of their Member States to discuss the current status of cervical cancer prevention efforts in countries, ways to strengthen these efforts can

be strengthened, whether and how the HPV vaccine can be introduced, and how WHO and other partners can provide adequate support to achieve country goals.

The general objective of this consultation was to assist countries in informed decision making on the prevention of cervical cancer. The specific objectives were:

- (1) To share available information on the prevention of cervical cancer.
- (2) To discuss challenges and opportunities in introducing HPV vaccines in the context of other public health interventions for preventing cervical cancer.
- (3) To identify actions that can be done at the country level, including operational research and technical support, as well as potential support from the participating international agencies.

1.3 Cervical cancer in Asia and the Pacific

The SEA Regional Office presented an information paper on cervical cancer and its prevention in the South-East Asia Region. There are 1.3 million estimated cases of all cancers resulting in 850,000 cancer deaths each year, which accounts for 9 percent of deaths from all causes. The most recent estimates for cervical cancer, from Globocan 2002, estimated 177,402 cases of cervical cancer with 96,091 deaths every year.

Existing public health strategies could prevent 50% of premature cancers, and a WHO model for conceptualizing implementation of such strategies has categorized public health interventions as follows:

- Step 1: Core interventions that are feasible to implement with existing resources in the short term.
- Step 2: Expanded interventions that are possible to implement with a realistically projected increase in, or reallocation of, resources in the medium term.
- Step 3: Desirable evidence-based interventions, which are beyond the reach of existing resources.

Existing cervical cancer control strategies were presented and classified according to their relative effectiveness. These are: (i) primary prevention through behaviour modification; (ii) early detection through screening; (iii) surgery; (iv) radiation; (v) chemotherapy; and (vi) palliative care.

In 2006, a survey was conducted in countries of the SEA Region to assess the capacity of their health systems to address noncommunicable disease (NCD) prevention and control. Of 11 Member countries, eight have national cancer control programmes but only four had developed guidelines for cancer management. Considering the human resources in terms of numbers of doctors and nurses per 10 000 population, it was clear that the majority of the countries have very low ratios, thus presenting additional challenges to developing cancer control programmes in addition to meeting many other health priorities. Finally, the number of institutions in each country providing radiotherapy was presented. Three of the 11 countries do not have such facilities and five countries have five or fewer facilities.

In summary, the burden of cervical cancer in the SEA Region is very high. Strengthening prevention is possible by improving screening programmes that incorporate lower cost alternatives to cytology. Although considerable knowledge exists, more operational research is needed, and countries should develop national cervical cancer control strategies, plans and programmes.

In the Western Pacific Region the unavailability of accurate information on the burden of cervical cancer and its epidemiology was stated as a common problem. The available data indicates approximately 300 000 deaths from cervical cancer each year; in 11 of the 37 countries of the Regions; cervical cancer being either the first or the second cause of death among women. Although there were several studies on the prevalence of the viral types of cervical cancer implemented worldwide, information on the same is scarce in the Western Pacific Region.

Linkages between cervical cancer prevention and control programmes and those of reproductive health, noncommunicable diseases, immunization and adolescent health provide opportunities for partnerships among multiple stakeholders in the context of strengthening health systems and optimizing health financing options. Reproductive health programmes can be the entry point for strengthening the cervical cancer prevention

programmes through creating awareness through information sharing and education, early detection and management. This will ensure broader opportunities for access to early diagnosis and treatment for reproductive health cancers, including cervical cancer.

Screening programmes are not in place in many countries in the Western Pacific due to competing priorities and lack of resources, including health infrastructure, human and financial resources. The integration of cervical cancer screening into primary health care (MCH, FP services), strengthening current efforts, evaluation of alternative options, strengthening primary prevention and establishment of comprehensive prevention and control strategies were among suggested principal approaches.

There were 7.6 million deaths attributed to cancer in 2005 globally; 70% of these deaths occurring in low and middle-income countries; 80% occurring in people under the age of 70; 40% of cancers being preventable and 33% being curable.

The WHO's *Global Action against Cancer* offers programmatic solutions, ranging from prevention, early detection and treatment, promotion of National Cancer Control Programmes and access to knowledge and technologies to support Member States to (a) prevent what is preventable (40%) through reducing exposure to risk factors; (b) cure what is curable (33%) by early detection, diagnostic and treatment strategies; (c) measure and manage success by strengthening national management, monitoring and evaluation. Cervical Cancer training tools and guides were presented, including a tool for programme managers, which is a series of six modules just published by WHO and available on its website.

2. Information on primary and secondary prevention of cervical cancer

2.1 Epidemiology of HPV infection

Understanding the epidemiology of HPV infection and its role as a precursor to cervical disease is important to designing effective cervical cancer control programmes. The human papillomavirus, a DNA virus with

affinity for squamous epithelial cells has over 100 types. The HPV types 16, 18, 31, 33, 35, 39, 45, 51, 56, 58, 59, 68, 73 and 82 are oncogenic/cancer-causing types. Among these types, HPV types 16 and 18 account for 73.5% of all HPV-related cervical cancer cases in Asia, which is similar to the global attribution of 70.7%.

HPV infection is the most common sexually transmitted infection globally: 80% of sexually active individuals will have at least one HPV infection by age 50. Within three years after the onset of sexual activity, nearly 50% of women acquire HPV infection. The peak prevalence is during adolescence with the peak age groups being 14-19 and 20-24. The global prevalence is about 10%, and is slightly lower in Asia at 8%. The Risk factors for acquiring HPV infection are: the number of one's own sexual partners and that of one's partner, and being with one partner for less than eight months. There is not strong evidence to suggest that smoking is a risk factor. No association has been found between male circumcision and acquiring HPV infection. It is important to note that about 60% of low-grade lesions regress within 2-3 years. This underscores the fact that only women with *persistent* HPV infection are at risk for developing precancer and cancer.

The consequences of HPV infection range from unapparent infection to squamous cell carcinoma. HPV infection is essential for the development of invasive cervical cancer but this only develops when the infection is persistent. Given that nearly 90% of infections spontaneously clear within two years, there is only a small percentage of those infected with HPV who are actually at risk of developing dysplasia. It should be noted that it is difficult to determine whether infections clear or enter a state of latency. The relationship between HPV infection and cervical cancer is so strong that HPV 16- positive women are 434 times more at risk to develop invasive cancer than women who are HPV 16 negative.

Until the advent of the vaccine, the options to prevent HPV infection were limited to behavioural interventions such as delaying the time of sexual debut, reducing the number of sexual partners, and correct and consistent condom use. Even with a vaccine that protects against Types 16 and 18, there is risk of contracting other high- risk HPV types that could lead to cervical cancer. For this reason, it is still important to screen women to determine whether they have developed precancer or cancer.

- HPV is a necessary precursor to cervical cancer
- HPV is the most common sexually transmitted infection globally
- Prevalence of HPV infection in Asia is around 8%
- Two HPV types, 16 and 18, are associated with over 70% of cervical cancers

2.2 Screening and early diagnosis

Importance of screening programmes

Screening for early detection of precancerous cervical lesions is an effective strategy for the secondary prevention of cervical cancer. It is important for each country to consider its available resources for public health interventions when making decisions about screening programmes. As only achieving coverage of 70%-80% can make an impact on cervical cancer mortality, it is important for cervical cancer screening programmes to maintain high population coverage. The programme's success depends on having high screening coverage and using a safe and effective treatment. A successful programme must link screening and treatment so as to prevent loss to follow-up, and ensure that those with precancer receive treatment. Each country should assess its epidemiological cervical cancer profile in order to determine the ideal age for screening.

Screening modalities available to countries

Pap smear

Most countries use cytology as a screening method for cervical cancer although at various levels of coverage, as stated by country presenters from India, Thailand, China, Viet Nam and Mongolia. Sri Lanka has established laboratories in every district and trained cytotechnicians and providers, while Bhutan provides screening in urban areas using the Pap smear. In Thailand some of the common challenges of screening included low coverage due to challenges such as a lack of human resources (pathologists and cytologists), unreliable or expensive laboratory equipment, difficulty in

tracking patients thus leading to inadequate follow-up, and limited clinical capabilities, especially in rural areas. When using cytology as a screening method, it is important to strengthen a country's delivery system so as to increase coverage and ensure effective client management.

VIA and SVA

JHPIEGO presented information on using Visual Inspection with Acetic Acid (VIA) as a screening test. VIA involves performing a vaginal speculum exam during which a health care provider applies dilute (3%-5%) acetic acid (vinegar) to the cervix and then views the cervix with the naked eye to identify colour changes. The acetic acid is used to enhance and mark the aceto-white change of a precancerous lesion. VIA detects a high number of low-grade lesions, which are more prevalent among younger women and are likely to regress without intervention.

The Single Visit (SVA) or the Test & Treat Approach combines testing using VIA with the offer of immediate treatment with cryotherapy if the test is positive, preferably in a single visit. Referral is offered to women with overt cancer or lesions requiring a higher level management. The key components of the SVA testing programme are: (i) counsel the woman about cervical cancer and empowering her to decide to have the screening; (ii) conduct the VIA test during a routine pelvic examination, (iii) discuss the result and the offer of treatment if VIA positive; (iv) perform cryotherapy after consent, and (v) provide additional information and follow-up instructions. Two *Safety, Acceptability, Feasibility and Programme Effectiveness (SAFE)* studies that were conducted by JHPIEGO and partners in Thailand and Ghana, with support from the Bill and Melinda Gates Foundation, found that the SVA can be safely and effectively provided by mid-level providers, cryotherapy had minimal complications when provided by trained providers, and women reported high satisfaction with the services they received.

HPV DNA testing

In 2005, the International Agency for Research on Cancer (IARC)/World Health Organization (WHO) recommended that HPV-DNA testing can be

used for primary screening instead of cytology. Polymerase chain reaction (PCR) and high-risk HPV-DNA testing (hc2) predict disease equally well. Currently, with support from the Bill and Melinda Gates Foundation, PATH has established a partnership with the private sector, the Screening Technologies to Advance Rapid Testing (START) Project to incentive research, development, and commercialization of two rapid, accurate, affordable, and acceptable tests for primary screening in low-resource settings. The target price per specimen for each of the rapid tests under development is less than US\$ 5.

The *FastHPV* test is being developed by Digene. It detects HPV-DNA after a processing period of less than 2.5 hours. Data obtained from the project thus far indicate that the *FastHPV* test is rapid and accurate. Specimens stored in the collection medium show excellent stability, and preliminary hc2 and *FastHPV* agreement is high. Expanded performance trials have been planned at multiple sites, and clinical validation trials are underway in China and India. An expected outcome from this project is that tests will be provided to the public health sector in low-resource settings at a preferential price for at least 10 years after commercialization.

The E6 Strip test is being developed by Arbor Vita. It detects E6 protein after a processing period of less than 20 minutes. PDZs (post synaptic density protein) are a conserved class of protein domains that engage in protein-protein interactions by binding PDZ ligands. E6 proteins of only high-risk HPV types interact with PDZs, and this PDZ-E6 reactivity provides a high level of selectivity for the assay. Anti-HPV E6 monoclonal antibodies are used as the detector. The availability of the test will be delayed as research on clinical significance of a positive test need to be performed.

HPV testing is effective for primary screening, but requires the development of affordable tests. For these new tests to have impact, it will be necessary to generate strong linkages with other cervical cancer prevention projects, and provide appropriate management for women who need it.

- Countries need to consider factors such as cost, availability of human resources, and effectiveness of the service delivery system, when deciding which screening method(s) to use. The screening modality selected should aim to achieve the maximum coverage possible.
- The Pap smear is an effective screening method, but it requires the availability of trained cytologists, a well organized referral system, and a strong service delivery system in order for high rates of coverage to be achieved.
- VIA is a simple, inexpensive method of screening, and when combined with the offer of immediate treatment if the test is positive, it has shown to be safe, effective and feasible for cervical cancer prevention in low resource settings.
- HPV-DNA testing is effective for primary screening, and more affordable tests are currently under development but not yet available.

2.3 HPV vaccine

The recent global availability of Gardasil™, a vaccine against HPV types 6, 11, 16 and 18 produced by Merck, Sharpe & Dohme (MSD) and of a bivalent vaccine against HPV types 16 and 18 produced by GlaxoSmithKline (GSK) present opportunities and challenges to countries in the Western Pacific and South East Asia Regions.

<http://www.who.int/reproductive-health/publications/cancers.html>

Questions about HPV Vaccine

There were several questions about the HPV vaccine raised and discussed by participants. The responses are summarized by topic below.

- (1) **Cost for publicly funded programmes:** The cost of the HPV vaccine is about US\$ 120/dose. Many country participants found that cost prohibitive for public health interventions in developing countries, where the prevalence of cervical cancer is highest. Partnerships with donor agencies (e.g. GAVI) would be necessary in order to fund the vaccine.

- (2) **Protection against cervical intraepithelial neoplasia versus cervical cancer:** Since long-term protection against cervical cancer as an endpoint was not studied, there was the question of whether the vaccine should be labelled as preventing cervical cancer or CIN. It was responded that the Food and Drug Administration (FDA) and European Union (EU) regulatory bodies have approved the product to be labelled as a vaccine that prevents cervical cancer. The advantages and disadvantages of assessing different outcomes, or endpoints, in HPV vaccine trials have been reviewed in depth. For vaccine licensing, the endpoint of CIN2/3 or AIS has been widely accepted as a proxy for cervical cancer that can be studied ethically. This endpoint can be evaluated among young women. In children or young adolescents, however, it is not practical to study this endpoint, since cervical specimens would be required, and the endpoint is rare in young people. Bridging studies are, therefore, conducted. In these the antibody responses of young people are compared with those of women for whom data on the clinical endpoint (CIN2/3 or AIS) will be available.
- (3) **Alternative (fewer) dosing schedule:** Studies were not done to test alternatives, but there will be research conducted in Viet Nam to explore various dosing schedules as part of the PATH HPV Vaccine Project.
- (4) **Virus mutations and other sub-types:** It is unlikely that other sub-types will replace Types 16 and 18 as the main contributors to HPV-related cervical cancer. Also, since HPV is a DNA virus, it is very stable and is unlikely to mutate over time, though this will have to be monitored.
- (5) **Recommendations of WHO SEA and WP Regions:** Countries should consider their country situation and needs in preventing cervical cancer. HPV vaccine is a primary prevention method, which is very promising for future prevention of cervical cancer, although it is not affordable as a public health intervention at this stage to most developing countries. While waiting for future development on strengthening effectiveness of the HPV vaccine and its significant cost reduction, countries should continue to further strengthen cervical prevention programme using the available and most cost-effective method(s).
- (6) **Cold chain issue:** As with other vaccines, HPV vaccines need cold chain for storing and transporting the vaccine.

2.4 Cost-effectiveness of screening programmes and HPV vaccine

One critical consideration for introducing the HPV vaccine into country programmes is not only cost, but cost-effectiveness, when compared to other available interventions. The example from Thailand was discussed in the presentation on *Cost-Effectiveness Issues of Cervical Cancer Screening and HPV Vaccines*, which focused on issues specific to Thailand, but the lessons can be applied to other country situations keeping in mind that models must be developed with country-specific information. The main question that these analyses seek to answer is: Can Thailand afford screening and vaccination, and in what combination?

Cost effectiveness of screening

An analysis of various screening strategies in Thailand clearly shows that VIA with treatment is very cost-effective, even when done at different ages and intervals. For example, if 35-year-olds are screened once using VIA with treatment, the cost is US\$121 per year of life saved (US\$5 million total) with an effectiveness of 27.045 life years saved. Screening using the HPV test done with the same cohort is nearly as effective, but costs significantly more overall (US\$23 million). This conclusion is confirmed by a five-country study conducted by Goldie, et al. (2005).

Cost effectiveness of HPV vaccine

Two different studies that analyzed the cost-effectiveness of a HPV 16/18 vaccine, conducted by Goldie et al. (2004) and Kulasingam et al. (2003) using similar assumptions (100% coverage of 12-year-old girls with a 3-dose vaccine that is 90% effective) were presented. While the results are slightly variable since different models were used, the conclusions are similar: vaccine plus screening is more effective than screening alone, but as intervals of screening increase the margin of additional benefit decreases while costs increase steadily. The cost per life-year saved or per quality-adjusted life year (QALY) that are calculated using these analyses are compared to other interventions and benchmarked against the per capita income of the country concerned. For example, the cost of antiretroviral therapy (ART) per life-year saved is US\$590 while the cost for

hemodialyses (renal replacement therapy) was US\$10,170. Given a percapita income of US\$2540 in Thailand (2006), one can observe that ART is very cost-effective while heemodialyses is far too expensive. Similar analyses should be conducted for the costs of screening and vaccination.

If other countries wish to perform the cost-effectiveness analyses relevant to their own situations, there are several factors to be considered when developing a model. These are depicted in Figure 2. Countries should develop their own policy options and financial implications for controlling cervical cancer. The conclusion for Thailand is that since the present cost of the vaccine is prohibitive to its introduction, the capacity to provide screening and achieve high coverage should be strengthened until more evidence is available and the cost of the vaccine is reduced to an affordable level.

Figure 2: Parameters affecting sensitivity of the cost-effectiveness of cervical cancer prevention strategies

- Initial and downstream costs
 - Initial costs of screening and vaccines
 - Follow-up costs of confirmed diagnosis and biopsy, colposcopy, etc...
 - Treatment costs of invasive cancer
 - Technology characteristics
 - Test performance of screening methods (sensitivity and specificity)
 - Treatment efficacy of precancerous stages
 - Efficacy and duration of efficacy of HPV vaccine
 - Disease epidemiology
 - Disease prevalence (HPV types and precancer)
 - Probability that precancerous lesions will progress to invasive cancer
 - Programmatic issues
 - Screening target ages
 - Screening coverage and adherence
 - Screening frequency
 - Follow up rate for abnormal screening results
 - Accessibility to treatment for precancer
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2.5 Financing HPV immunization programmes

Professor Suzanne Garland, President of the Asia-Oceania Research Organization on Genital Infections and Neoplasia (AOGIN) Australia, and Director of Microbiological Research, Clinical Microbiology and Infectious Diseases at the Royal Women's Hospital, Australia, made a presentation of *Financing HPV Vaccine Immunization Programmes: Private-Public Partnerships*. She stated that a successful vaccination programme requires several factors including regulatory approval; recommendations for use; affordability; a wide and sustainable coverage of the target population; sustainable delivery infrastructure; education; awareness and advocacy; surveillance of vaccine coverage and evaluation of disease outcome. Strategies that can be used to address the issue of affordability include private and public sector partnerships; involvement of the GAVI Alliance; tier pricing and differential pricing; and novel funding mechanisms such as the Advanced Market Commitments (AMCs).

Private and public partnerships

Private and public sector partnerships can play a key role in the development of a successful HPV immunization programme. These partnerships combine the interests of the public sector with the needs of private industry to reduce the time lag to the introduction of the vaccine, increase equity for poor countries and enhance planning and coordination. Potential contributions of private and public partnerships are as follows: (i) clinical research; (ii) regulatory issues; (iii) policy-maker information; (iv) establishing delivery systems; (v) information needs; (vi) supply and financing.

Involvement of the GAVI Alliance GAVI is a public-private partnership focused on increasing children's access to vaccines. Partners include the GAVI Fund, national governments, UNICEF, WHO, the World Bank, the Bill and Melinda Gates Foundation, the vaccine industry, public health institutions and nongovernmental organizations (NGOs). GAVI helps strengthen the immunization services of countries by providing cash support to improve immunization programmes based on the application submitted by the country and the findings of immunization programme assessments. GAVI involvement for HPV vaccine has been sought recently.

Advanced market commitment

The advanced market commitment mechanism is one where manufacturers commit to supply a vaccine at a pre-guaranteed price. Developing countries pay a low co-payment price and AMC funds from a donor are used to pay the pre-agreed price. When AMC funds are depleted, manufacturers continue to provide the vaccine at a relatively lower price which could be the same as the co-payment price.

3. Challenges and opportunities in introducing HPV vaccines within other public health interventions for preventing cervical cancer

3.1 Country presentations: National Cervical Cancer Prevention and Control

The following countries presented information on their cervical cancer prevention and control programmes. Common themes across the countries include: high incidence and mortality rates, lack of comprehensive nationwide cervical cancer control programmes, competing public health priorities, a lack of community awareness, and a lack of resources and service delivery systems.

India

According to a presentation by a representative from one of the public institutions dealing with cancer, India has the highest burden of cervical cancer with over 25% of the world's cases. Cervical cancer is the leading cause of death among middle-aged women in India and accounts for over 100 000 deaths a year, with over 80% of cases presenting themselves at an advanced stage. There is no population-based screening programme, and an assessment of current screening services shows that there are limited opportunities for provider training and gaps in provider knowledge and practices. Screening of asymptomatic women is almost absent; and Pap smears, which are available only in tertiary centres, are of poor quality.

There are several competing public health priorities, and cancer is not among them.

There have been a number of research studies conducted in India, which have produced evidence on the basis of which guidelines for cervical cancer control have been developed. An Indian expert group meeting was held in 2006. The meeting recommended screening women aged 30-59 years using VIA testing by a nurse or a health worker. VIA-positive cases are referred to a district cancer centre and VIA-negative cases undergo repeat screening after five years. VIA is currently being moved from research into programmes. Challenges faced during this transition are accuracy in a multi-provider context; low specificity, which may offset cost-saving; and a need for standardization of quality control methods. The effectiveness of VIA in real-life health services also needs to be determined and integrated into primary health care.

China

Due to the improvement of diagnosis and treatment in the People's Republic of China, cervical cancer death rates have been declining in most parts of the country in the past 20 years. However, in some areas hospital-based data shows that the number of young patients has increased significantly. About 64% of HPV genotypes found are 16 and 18, and HPV infection prevalence varies between urban and rural areas.

Most of the screening is opportunistic, and there is a shortage of qualified cytologists. HPV DNA tests and liquid-based cytology (LBC) are gaining popularity, but the HPV vaccine is not available. There are several cervical cancer screening and HPV testing studies underway in China, including an epidemiological study on the distribution of HPV types (hospital-based multi-centre study), screening technologies to advance rapid testing for cervical cancer prevention, Shanxi screening studies, and population-based HPV profile studies. In addition, two national demonstration centres for early detection and treatment were opened in 2005 in Shenzhen, a prosperous neighbourhood of Hong Kong, and Xiangyuan, a less affluent coal-mining province.

A national cancer prevention and control strategy is endorsed by the Ministry of Health. Recommendations for cervical cancer prevention are under review and include strategies such as enhanced training for community health workers; (CHWs), integration of cervical cancer prevention and treatment with genital tract infection control; strengthening of opportunistic screening; promotion and research on the key techniques of cervical cancer prevention; enhancing cervical cancer registries; an emphasis on high-risk areas; and promoting research in new technologies, including HPV vaccines. In addition, several WHO/IARC literature material materials have been translated into Chinese.

Mongolia

According to the Mongolian country team, cervical cancer is the second leading cancer among women in the country (an incidence of 22.5 cases per 100 000) and includes 62% female reproductive cancers. Only one study has been conducted on the prevalence of HPV subtypes, and Type 16 is the most prevalent.

Some challenges faced are lack of awareness among the population, lack of a screening programme, low capacity of gynaecologists to perform colposcopy, few trained cytologists and lack of laboratory supplies. Proposed approaches include health education for both genders; early detection through VIA; training of secondary level health-care providers on LEEP (loop electrosurgical excision procedure); strengthening of the reference pathology lab at the National Cancer Control Program (NCCP), early referral to the NCCP; strengthening of the national cancer registry; and introduction and adaptation of internationally accepted clinical guidelines.

Viet Nam

Cervical cancer is the most common form of cancer and the leading cause of cancer deaths among women in Viet Nam. In 2002, there were an estimated 6224 new cases diagnosed and 3334 deaths reported. The age-standardized incidence and mortality rates for cervical cancer were 20.2 and 11.2 per 100 000 females in the same year. The incidence of cervical

cancer is significantly higher in Southern part of Viet Nam than in Northern part of Viet Nam (26.0 vs. 6.1 per 100 000 females).

Although there is no specific national plan yet, prevention of reproductive tract cancers is one of the objectives of the National Strategy on Reproductive HealthCare. Challenges include outlay, human resources (quality and quantity), and equipment, lack of resources, and limited primary interventions. Secondary interventions have been based on hospital-based services. There is an HPV vaccine pilot study in Hoa Binh that is looking at 800 secondary students aged between 10-13 years.

Recommendations include developing a national guideline on reproductive tract cancer prevention; human resource capacity development with an emphasis on local rather than national levels; collaboration between the reproductive health system and the cancer prevention network; promotion of scientific research including operational research and application of biological and genetic technologies. Behaviour change and counselling activities should be strengthened to raise community awareness.

Thailand

Cervical cancer is the most common form of cancer among women in Thailand, although in some regions it is second to liver cancer and breast cancer. There are 6200 new cases per year, and 2600 deaths, and HPV 16 and 18 are present in 65% of cancers. Thailand has a population-based cancer registry in nine sites.

A national policy for cervical cancer control programme now exists. Screening is integrated into the health-care system, and is free. The National Cancer Institute is responsible for Pap smear in all 76 districts, and the department of health is responsible for VIA in 9 provinces. A VIA demonstration project has been carried out, and the country may conduct an HPV Hybrid Capture demonstration project in one province. Thailand also conducts colposcopy courses in collaboration with the NCI and IARC.

- Common themes across all countries include high incidence and mortality rates, a lack of comprehensive nationwide cervical cancer control programmes, competing public health priorities, a lack of community awareness, and a lack of resources and service delivery systems.
- Several countries are currently reviewing national guidelines for cervical cancer control.
- Proposed intervention strategies common to most countries are increasing provider training, enhancing cancer registries, strengthening service delivery systems and conduct of scientific and operational research.
- For public health interventions, it is not about doing the best test, it's about doing the *best test you can do* to benefit the most people.

3.2 Summary of country group discussions

Country teams attending this consultation were composed of representatives from the ministries of health, professional groups, and WHO country offices. The team participated in structured discussions. The first of these was a country group discussion and the second was a country team action planning session.

Country group discussions were held to allow participants to share information amongst themselves about developing and implementing cervical cancer prevention programmes, and also to discuss individual country strategies for the prevention of cervical cancer. Countries were grouped in such a way that those having more and less established programmes could share experiences, i.e.

Group 1: China, Malaysia, Mongolia, Sri Lanka.

Group 2: Philippines, Viet Nam, India, Bangladesh.

Group 3: Cambodia, Thailand, Bhutan, Maldives, Nepal.

Group 4: Fiji, Indonesia, Myanmar and Timor-Leste.

The groups were asked to discuss major lessons learned and challenges encountered while implementing their programmes and focus on three key programme areas: policy and programme development, quality assurance, and scale-up/sustainability. Each group delivered a presentation to the plenary highlighting key themes from the discussions. The common themes that emerged are summarized below.

Advocacy

- Identify key stakeholders and bring them together for consensus meetings. They include the ministries of health, finance, education and women's affairs; political leaders; the private sector; NGOs; professional associations; academic bodies; religious groups; international agencies and the media.
- Develop a national coordinating committee to guide the cervical cancer prevention control programme.
- Ensure that a national policy, with guidelines and strategy, exist and is disseminated.
- Needs assessment is necessary to collect information about the disease burden, human resource capacity, infrastructure, and training systems.
- Raise public awareness using a communications campaign and engaging the media to bring attention to the issue.

Prevention strategies

- Range of strategies currently used, with focus on secondary prevention through screening.
- Secondary prevention options are VIA, Pap smear, and FastHPV test (operational research needed). The modality chosen depends on the infrastructure and resources of each country.
- Country-specific guidelines need to consider screening modality, target age group, screening interval, referral and treatment options.
- Willing to consider introducing HPV vaccine if it becomes affordable.

Quality assurance

- Develop supervisory system for laboratory, sampling methods, diagnosis, and treatment; as well as monitor positivity and detection rates.
- Develop a functional referral system.
- Create performance standards in the form of protocols, checklists and indicators.
- An information system must collect data on the service and produce reports for various stakeholders to make decisions about the programme. This may include an electronic registry specifically for cervical cancer.

Scale-up/sustainability

- Political commitment is key to ensuring sustainability, which is linked to ensuring adequate funding, particularly in the public sector.
- Community mobilization to ensure continued demand as services are scaled up, especially on male involvement and female empowerment.
- Capacity building of human resources, through both pre-service and in-service mechanisms.
- Integrating cervical cancer prevention services into other reproductive health or primary-care services to ensure sustainability past the initial project or demonstration phase.
- Support from development partners/technical agencies is important in the initial phases of scale-up.
- Advocating for insurance coverage of screening, where available, is a means of financing the programme in the long run.

Lessons learnt/challenges

It is feasible to implement cervical cancer prevention programmes, but this requires overcoming such challenges as limited human, financial, and material resources; limited availability of data; HPV DNA tests are still too costly and HPV vaccination not yet accessible/affordable.

3.3 Discussion: Challenges regarding HPV vaccine

The general feedback from country participants was that their focus should be on strengthening secondary prevention programmes because the HPV vaccine is still out of reach mainly due to its prohibitive cost. In the words of one representative “it was an open and shut case because of the cost”. There are however issues facing countries other than the cost: There are: (i) a desire for more information about the long-term effects and effectiveness of the vaccine; (ii) the desire of country participants to know what clients and health professionals think about the vaccine, through disseminating information and holding consultative meetings; (iii) some countries consider cervical cancer prevention to be of lower priority than others – particularly where the maternal mortality ratio is high. In this case, it is difficult to justify investing many resources in screening programmes, let alone an expensive vaccine; (iv) socio-cultural issues were raised over the fact that the virus is sexually transmitted and therefore the HPV vaccine may be controversial in many settings. Several of these issues were summed up by a representative from India, who said:

Even if this vaccine cost US\$3.50 per person, we would have to spend Rupees 1.26 billion for it for the age group of 9-16 in 1 State alone. All the money spent on drugs for all of health centres right now is Rupees 1.2 billion for an entire year. This might be feasible if the cost were US\$0.25 per person. We need to bear in mind that this is not the only disease affecting people. The kind of money that might need to be spent for this vaccination could be used to prevent many other deaths.

Policy-makers who will be deciding about if, how, and when to introduce the HPV vaccine as part of a cervical cancer control strategy will have to address these and other questions. It is hoped that the research currently undertaken by industry, nongovernmental organizations such as PATH, and other groups will provide answers to these important questions. In the meantime, there are still steps that can be taken to improve country actions to prevent cervical cancer. The next section of the report describes such actions.

4. Actions that can be done at the country level and potential support from international agencies

4.1 Proposed country activities

Country teams met to discuss the lessons they had learned during the consultation and began to define the actions that they can take at the country level to strengthen national cervical cancer prevention programmes. They were asked to complete a matrix indicating which activities would be done, by whom, when, where, and how. These plans were submitted to the Regional Advisers of the Western Pacific and South-East Asia Regions, who presented their synopses to the plenary. A matrix showing country and proposed actions can be found in *Annex 4*. More detailed action plans can be obtained from the Regional Offices for Western Pacific and South-East Asia..

The summary of actions proposed by the WPRO countries¹ of the Western Pacific Region covered a wide range of actions including: (i) needs assessment; (ii) advocacy and obtaining political support; (iii) establishing a mechanism for national coordination such as a committee/council; (iv) develop policies and guidelines; (v) information, education and communication, public awareness; (vi) strengthen current activities (this is a wide area of concern and mainly focuses on strengthening the cervical cancer screening and early detection and management using various approaches that involve all or some of the three established modalities of (a) cervical cytology by Pap smear, (b) visual inspection with acetic acid (VIA), and (c) HPV DNA testing) (vii) strengthen human resource capacity, especially training; (viii) other capacity strengthening; (ix) information system, monitoring and evaluation including tracking of women and; (x) financing, which is the major issue for the introduction of the HPV vaccine.

It was observed that the seven countries of the Western Pacific Region and additional members will need to be consulted again to review these generic plans and develop them in greater detail. Further, the Western Pacific Regional Office will explore how it can assist to support countries in their efforts.

¹ WPRO Countries represented: Cambodia, China, Fiji, Malaysia, Mongolia, Philippines and Viet Nam

The summary of actions proposed by countries² of the South-East Asia Region included: (i) conducting a needs assessment; (ii) holding high-level stakeholder consensus meeting; (iii) training in VIA, either initial or refresher courses; (iv) developing information, education and communication (IEC) materials to raise public awareness levels on cervical cancer and the HPV vaccine; (v) conduct VIA pilot project; (vi) develop and/or disseminate national guidelines/strategy; (vii) improve services delivery; (viii) develop national cancer registry; (ix) incorporate content on cervical cancer screening into pre-service curriculum; and (x) pilot HPV vaccine introduction (if supported by GAVI).

The Regional Office for South- East Asia committed to provide support to select countries to help them achieve some of their proposed activities.

4.2 Panel discussion: Technical partner initiatives

The technical assistance partners present at this meeting were Family Health International, JHPIEGO and PATH.

Family Health International (FHI)

According to Dr Graham Nielsen, FHI is currently working on two initiatives in the Asia- Pacific Region aimed at building consensus and momentum to prepare for the introduction of HPV vaccines into cervical cancer programmes. The first was a regional project which has been underway for six months. So far, stakeholder mapping has been carried out, and a satellite meeting was hosted in Bangkok on November 2006 in collaboration with the WHO and other partners. The second was a project in Thailand focusing on advocacy and policy development. Three workshops have been planned as a part of this project (health sector, community sector and a national forum).

FHI has a strong background in HIV and reproductive health, and can support countries to assess the burden of HPV disease, model the health impact of screening programmes, costing and cost-effectiveness of HPV vaccines, address missed opportunities for integrating cervical cancer

² SEARO Countries represented: Bangladesh, Bhutan, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, Thailand, Timor-Leste

prevention into existing reproductive health programmes, and develop community education programmes. The organization can also leverage its experience in HIV prevention through working with female sex workers and other high-risk groups.

JHPIEGO

JHPIEGO presented the following information: JHPIEGO is an affiliate of the Johns Hopkins University. Its expertise lies in translating research to practice with innovative approaches that are applicable in low-resource settings. JHPIEGO's work in cervical cancer started in 1997 with a study in Zimbabwe to test the efficacy of VIA. In 1999, with funding from the Bill and Melinda Gates Foundation, a safety, acceptability, feasibility and programme effectiveness (SAFE) study on the use of the Single Visit Approach (SVA) was conducted in Thailand and Ghana. The results of this study showed that mid-level providers can safely provide screening and treatment services using this approach; cryotherapy had minimal complications; and women reported a high level of satisfaction with the services received.

JHPIEGO has an organizational commitment to cervical cancer prevention and has been working in Thailand, Ghana and Malawi. New programmes have also been started in the Philippines, Indonesia, South Africa and Mozambique. JHPIEGO advocates globally for cervical cancer prevention by briefing donors, making presentations at international meetings, training healthcare providers, and making training material available. SVA training material has been translated into Spanish, Thai, Indonesian and Tagalog (spoken in the island of Luzon in the Philippines), and efforts are underway to develop generic communication materials which can be adapted by countries.

JHPIEGO is part of the Alliance for Cervical Cancer Prevention (ACCP), and shares in its goal of preventing cervical cancer in developing countries. Newly analyzed results of key ACCP studies in India, Republic of South Africa, Peru and Thailand provided the impetus to outline 10 key recommendations for global policy and practice related to cervical cancer screening and treatment in low resource settings. The recommendations are currently under review.

PATH

PATH has been on the forefront of cervical cancer prevention since the mid-1990s, and is a member of the Alliance for Cervical Cancer Prevention. The PATH Cervical Cancer Vaccine Project 2006-2011 is funded by the Bill and Melinda Gates Foundation and it aims to generate and disseminate necessary evidence for public sector introduction of the HPV vaccine. The countries selected for formative and operational research are India, Peru, Uganda and Viet Nam. The selections were made on the basis of high disease burden, capacity to conduct research, political commitment, access to target groups, and the degree to which the experience in the selected countries would be representative of their regions. In addition to the projects in these countries, there are small grants available for other nations.

In India, PATH is working in two states in collaboration with the government and other stakeholders. The HPV vaccine project is being conducted in two phases: (1) a formative study to plan, design and guide the pilot project; and, (2) operations research based on input from the formative research. This will focus on the delivery system, communication messages, and an advocacy strategy. In Viet Nam, the first phase of the HPV vaccine project will focus on designing a pilot study that will include socio-cultural research, clinical study, and an assessment of the services delivery system. The clinical study will evaluate immunogenicity and reactogenicity of alternative dose schedules of HPV vaccination in order to increase flexibility in future designs of the delivery strategy and to understand the implications of non-standard schedules. The second phase will focus on a demonstration project which will identify the most cost-effective strategy for reaching 11-13-year-old girls.

Programme of Action for Cancer Therapy (PACT)

The International Atomic Energy Agency (IAEA) created PACT to help developing nations fight cancer through global, integrated and comprehensive action by international organizations, governments, public and private institutions. PACT can leverage IAEA's more than US\$180 million investment over the past 30 years in creating cancer treatment infrastructure to drive much-needed investment in other areas of cancer capacity building.

PACT aims to expand sustainable national cancer care infrastructure and capacity, and progress towards eventual self sufficiency in cancer prevention and control by:

- building a Cancer Control Alliance of interested parties committed to addressing the challenge of cancer in developing countries in all its aspects; and,
- mobilizing resources from charitable trusts, foundations and others in the public and private sectors to meet the above challenge over an incremental, phased five to ten year strategy.

The integrated missions of PACT (imPACT) is a tool to assist governments in reviewing their cancer management infrastructures and assessing national needs to raise funds and build adequate cancer care capacity. The imPACT is the first step in any national execution of PACT and comprises of an interagency needs assessment for cancer capacity building from prevention through palliation. Its is multidisciplinary and multi-stakeholder, involving not only expertise from IAEA, but also that of WHO, IARC, IUCC and other leading cancer care agencies and institutions.

The main product of imPACT is a National Cancer Strategy and Action Plan authorized by the Member state with technical support from the IAEA, WHO and partners. The IAEA emphasis is on radiation therapy and nuclear medicine, and WHO and partners focus on prevention, early diagnosis and other areas of cancer control. Complementary products are Specific Action Plans to meet prevention, control or treatment needs. PACT is currently focusing on cancer control training by creating multidisciplinary cancer control (MCC) staffing self-sufficiency in “mentor” centres, and developing and launching a web-based multidisciplinary Virtual Cancer Control University (VCCU).

4.3 Role of development partners/international non-governmental organizations

Information for this section was obtained from presentations by JHPIEGO, PATH, Family Health International, and the International Union for Cancer Control (IUCC). Simple tools to address cervical cancer prevention already exist and it is important to use what is currently available while laying down the platform for future activities. Partner organizations such as Family

Health International, JHPIEGO, and PATH are ready to support country efforts in screening and control activities. Each organization has different areas of expertise and all the organizations are willing to complement each others' efforts. The Alliance for Cervical Cancer Prevention (ACCP) is evidence that partnerships can be effective and the scaling up of such partnerships may be a useful strategy.

Some specific information about partner activities and resources was shared:

- PATH has small grants of about US\$70 000 which can be used for various purposes. PATH also hosts the website www.rho.org which is an online information resource for health programme managers and decision-makers working in developing countries and low-resource settings. In addition, PATH disseminates useful cervical cancer prevention information to interested persons worldwide via the *HPVflash* – an email news bulletin.
- JHPIEGO recently held a VIA/cryotherapy training in Thailand and can organize another training in collaboration with the WHO Regional Offices if there is sufficient interest.
- The International Union for Cancer Control (UICC) Asia Regional Office is a research-based unit that publishes a journal on cancer control in Asia.

5. Conclusions

The purpose of the three-day meeting was to bring together key stakeholders from 17 select developing countries in the Asia and Western Pacific Regions to discuss cervical cancer prevention and the implication of the introduction of HPV vaccines. Towards this end, the meeting was organized to highlight the continuing public health burden that cervical cancer imposes on developing countries; provide critical technical updates in the current and evolving technologies in cervical cancer prevention and control; and create an opportunity for countries to share their successes and challenges addressing this issue. This knowledge sharing has fostered a common ground for countries to learn from each other and develop doable, country-level “next steps forward” to reduce and eventually eliminate cervical cancer deaths.

What was made clear in this meeting is that cervical cancer continues to exact a greater burden among women from South-East Asia and the Western Pacific despite the fact that developed countries have demonstrated that it is preventable through screening and treatment. Unfortunately, reports from countries participating in this meeting indicated that cytology-based screening and subsequent treatment of precancerous lesions is generally inaccessible to most of their eligible women. The understanding of the role of HPV infection in the genesis of cervical cancer has considerably excited stakeholders particularly regarding the potential of HPV vaccines as a true and ideal anti-cancer vaccine. This is tempered by the realization that the challenges of acceptance, affordability and access to HPV vaccines are going to take some time to resolve before countries can truly enjoy the benefits of HPV vaccinations. However, stakeholders from countries represented in this meeting also realize the need to “do the best that they can afford to do” for cervical cancer prevention rather than wait for more women to die of the disease. The next step forward, summarized according to region, is a reflection of the desire of each of the 17 countries to start or strengthen their cervical cancer prevention efforts through: (i) identifying gaps in their programme; (ii) developing advocates and supporters; (iii) strengthening cervical cancer prevention policies and guidelines; (iv) creating or supporting a data-gathering system for cervical cancer; (v) pilot-testing resource-appropriate screening and treatment approaches; and, (vi) building capacity to improve access to cervical cancer prevention services.

The coordinating role of the WHO Regional Office and Country office coordination with the government should be emphasized.

Annex 1

Programme

Wednesday, 11 April 2007

- 10:30 – 11:30 Registration
- 11:30 – 12:30 Inauguration
- 12:30 – 13:30 Lunch break
- 13:30 – 14:00 Panel 1: Cervical cancer and its prevention in the Asia-Pacific Region
- *Dr J. Leowski*, Regional Adviser, Noncommunicable Diseases, WHO/SEARO
 - Dr Narimah Awin, WHO/WPRO
- Discussions
- 14:00 – 14:30 Panel 2: Updates on epidemiology of HPV infection
- *Dr Jeffrey Partridge*, Epidemiologist, IPD, WHO Nepal Office
 - *Karly Louie*, MSc, Cancer Epidemiology and Registration Unit, Institut Català d'Oncologia
- Discussions
- 14:30 – 14:50 Introduction of Comprehensive Cervical Cancer Control: A guide to essential practice, and overall action plan
- *Dr Nathalie Broutet*, Department of Reproductive Health and Research, WHO/HQ
- 14:50 – 15:30 Panel 3: Country presentations: National cervical cancer prevention and control
- India, Thailand, China, Viet Nam and Mongolia
- 16:00 – 17:00 Panel 3 (continued)
- Discussions
- 17:00 – 17:10 Short film on HPV prevention (PATH)
- 17:10 – 18:00 Market place session:
- State of the art in cervical cancer prevention exhibit
 - Country posters
 - WHO and UNFPA guides, guidance, technical briefing note
 - Exhibit by cooperating agencies on their materials/publications

Thursday, 12 April 2007

- 08:30 – 08:50 Technical briefing note and the Policy and Programmatic Guidance for introducing HPV vaccine
- *Dr Nathalie Broutet*
- 08:50 – 09:45 Panel 4: Preventing cervical cancer: Public health options
- HPV vaccine: A new technology for cervical cancer prevention
Dr Punnee Pitisuttithum, Chief, Research Unit, Mahidol University
 - Cervical cancer screening, early diagnosis and DNA test for HPV
Dr Khunying Kobchitt Limpaphayom, Chulalongkorn University/JHPIEGO Thailand
 - Update on new HPV test technologies for bringing cervical cancer screening to remote areas
Dr Nathalie Broutet
- Discussions
- 09:45 – 10:30 Panel 5: Initiatives conducted by partners:
- JHPIEGO:
Dr Ricky Lu, Medical Officer, JHPIEGO, Baltimore/USA
 - PATH:
Dr Martha Jacob, FRCOG, MPH, Senior Programme Manager HPV Vaccine, PATH India
 - FHI:
Dr Graham Neilsen, Associate Director, Technical Support, FHI, Bangkok, Thailand
- Discussions
- 11:00 – 11:45 Panel 6: Updates on the work of the Industry Community
- Merck, Sharp & Dohme: Introduction of the Quadrivalent HPV vaccine (Gardasil): Global update
Dr Gregg C. Sylvester, Senior Director, Medical Affairs, Merck vaccines
 - GSK's cervical cancer candidate vaccine: Clinical update
Dr Jovelle B Laoag-Fernandez, MD, PhD, FPOGS, Regional Medical Affairs and HPV Vaccines, APACHJ
- Discussions

- 11:45 – 12:30 Panel 7: Cost-effectiveness and financing issues
- Cost-effectiveness of HPV vaccines and screening programmes
Dr Supon Limwattananon, International Health Policy Programme, MoPH, Thailand
 - Financing HPV vaccine immunization programme: Public-private partnership
Dr Suzanne Garland, President, AOGIN, Australia
- Discussions
- 13:30 – 13:45 Introduction to the group Discussions
- 13:45 – 15:30 Group Discussion 1: Strengthening prevention of cervical cancer
- 16:00 – 17:00 Group discussion (continued)

Friday, 13 April 2007

- 08:30 – 10:00 Presentation of group work (1)
- 10:00 – 10:30 Group Discussion 2: Approaches for scaling up: Possible actions in countries
- 11:00 – 12:30 Group Discussion 2 (continued)
- 12:30 – 13:30 Lunch break
- 13:30 – 15:00 Presentation of group work (2)
- 15:00 – 15:30 Conclusions and recommendations

Annex 2

List of participants

Country participants

South-East Asia Region

Bangladesh

Dr Ashrafunnesa
Senior Consultant/Focal Point for Cervical Cancer,
Screening Training Project
Department of Obs/Gynae Bangabandhu Sheikh
Mujib Medical University (BSMMU)
Shahbagh, Dhaka
Email: ashra58@yahoo.co.uk

Bhutan

Ms Pem Zam
Programme Officer
Reproductive Health
Department of Public Health
Ministry of Health
Thimphu

Ms Yangchen Pelden
Administrative/Programme Officer
National Women's Association of
Thimphu
Thimphu

India

Mr CBS Venkata Ramana, IAS
Commissioner of Family Welfare and
ex-officio Principal Secretary Government of Andhra
Pradesh
Department of Health, Medical and Family Welfare
Commissionerate of Family Welfare Directorate of
Health Campus
Sulthan Bazar, Koti,
Hyderabad 500 095
Tel: +91-40-24650365, -24653771
Fax: +91-40-24652267
Email: cfwhyd@ap.gov.in

Dr K.A. Dinshaw
Director, Tata Memorial Hospital
Tata Memorial Centre (TMC)
Department of Atomic Energy (DAE)
Dr Ernest Borges Road, Parel
Mumbai, 400 012

Indonesia

Dr Sri Hermiyanti
Director of Mother's Health
Ministry of Health, 8th floor, Room 808
Jln HR Rasuna Said Kav 4-9 Blok X5
Kuningan, Jakarta Selatan 12950
Tel: (62 21) 522 1227
Fax: (62 21) 520 3884
Email: mimin_j@yahoo.com

Dr Trisnawaty G. Loho
Head of Subdirectorate
Reproductive Health Prevention, MoH
8th Floor, Room 811
Jln HR Rasuna Said Kav 4-9, Blok X5
Kuningan, Jakarta Selatan 12950
Tel: (62 21) 520 1597 ext 8211; 526 5002
Fax: (62 21) 526 5002
Email: trisnaloho@yahoo.com

Dr Achmad Hardiman, SpKJ
Director Noncommunicable Disease
Directorate-General of Disease Control and
Environmental Health, MoH
Building D, 3rd Floor
Jl Percetakan Negara No. 23, Jakarta
Tel: (62 21) 424 7608 ext. 122
(62 21) 4288 2116 (direct phone)
Fax: (62 21) 4288 2116
Email: achmad_hardiman@yahoo.com

Dr Rini Novianti,
Head of Subdirectorate of Cancer Directorate of
Prevention and Control of Noncommunicable Disease,
MoH
Building D, 3rd Floor
Jl Percetakan Negara No. 23, Jakarta
Tel: (62 21) 424 7608 ext. 122
(62 21) 4288 2116 (direct phone)
Fax: (62 21) 4288 2116
Email: rini_n@link.net.id;
kanker_depkes@yahoo.co.id

Dr Suryono S.I. Santoso
President
Indonesian Society of Obstetrics and Gynaecology
Jakarta

Maldives

Mr Ahmed Khaleel
Assistant Director-General
Department of Public Health, Male
Tel: 333 1553, 778 7990
Fax: 331 4653
Email: khaleel@dph.gov.mv

Myanmar

Dr San San Oo
Assistant Director (Maternal and Child Health)
Department of Health
Yangon

Dr Yin Yin Soe
Associate Professor/Consultant
Department of Obstetrics and Gynaecology
University of Medicine (II)
Yangon

Dr Myint Myint Than
Deputy Director (WCHD)
Department of Health
Yangon

Dr U Myo Min
Consultant
Radiotherapy Department
Mandalay General Hospital
Mandalay

Nepal

Ms Mangala Manandhar
Family Health Division
Ministry of Health and Population
Kathmandu

Dr Sita Pokharel
President, All Nepal Women's Organization
Kathmandu

Dr Achala Vaidya
Associate Professor
Bir Hospital Kathmandu

Sri Lanka

Dr Chitramalie de Silva
Consultant Community Physician
Family Health Bureau, MoH
235 De Saram Place, Colombo 10
Email: chithudesilva@yahoo.com

Dr G Weerasinghe
Consultant Venerologist
Teaching Hospital, Ragama

Dr K Karunarathne
National Cancer Control Programme Maharagama

Thailand

Ms Yupa Poonkhum
Public Health Technical Officer
Reproductive Health Division
Department of Health
Ministry of Public Health
Tel: 66 2590 4238
Fax: 66 2 590 4163
E-Mail: poonkhum@health.moph.go.th

Mrs Nitaya Bhuthuwate
Technical Health Officer
Bureau of Noncommunicable Diseases
Department of Disease Control
Ministry of Public Health
Tel: 66 2590 3987
Fax: 66 2 590 3988
E-Mail: nitayabh@gmail.com

Ms Nattaya Boonpakdee
Programme Manager, Health Sexuality Programme
Thai Health Promotion Foundation
C/o Women's Health Advocacy Foundation
12/22 Tessabansongkroh Road, Ladyao, Jatujak,
Bangkok 10900
Tel: 66 2591 1224 ext. 14
Fax: 66 2591 1099
E-mail: nattaya@whaf.or.th

Western-Pacific Region

Cambodia

Dr Prak Piseth Raingsey
Director, Dept of Preventive Medicine
#151-153, Avenue Kampuchea Krom
Phnom Penh
E-mail: pisethsey@yahoo.com

Dr Hy Sorya Phea
Chief of Maternity Unit
National Maternal and Child Health Centre
16E, Street 139, Vealvong
7 Makara, Phnom Penh
Tel: (855) 16 812464

Ms Taing Sokun Phala
National Coordinator for Training
National Reproductive Health Programme
National Maternal and Child Health Centre
Street France, Sras Chak, Daun Penh
Phnom Penh
Tel: (855) 12 998653
E-mail: phalataingsokun@yahoo.com

Ms Oum Chanthan
Officer-in-charge of Adolescent Health
National Coordinator for IEC/BCC
National Maternal and Child Health Centre
Street France, Sras Chak, Daun Penh
Phnom Penh
Tel: (855) 12 998653

China

Dr Song Li
Deputy Director, Division of Women's Health
Department of Maternal and Child Health and
Community Health,
Ministry of Health
Beijing
Tel: (8610) 68792309
Fax: (8610) 68792321
E-mail: songlimoh@126.com

Dr Qiao YouLin
Vice-Secretary-General
Chinese Cancer Foundation
Department of Cancer Epidemiology, Cancer Institute
Chinese Academy of Medical Sciences
P.O. Box 2258, Beijing 100021
E-mail: qiaoy@public.bta.net.cn

Dr Liu JiHong
Deputy Director
Gynaecological Oncology Department
Sun Yat-sen University Cancer Centre
WHO Collaborating Centre for Research and Training
in Cancer
E-mail: liujih@mail.sysu.edu.cn

Dr Zhao Gengli
Secretary for Women's Health Branch, Chinese
Prevention Medical Association
Women's and Children's Health Centre
Peking University, Beijing 100083
Tel: (8610) 662 74284
Fax: (8610) 661 67629
E-mail: zhaogengli@sina.com

Fiji

Dr Inosi Voce
Consultant, Obstetrician/Gynaecologist
Lautoka Hospital, P.O. Box 65 Lautoka
Tel: 6660399
E-mail: inosi.voce@govnet.gov.fj

Dr Vijayalakshmi Garimella
Medical Officer, Oxfam Clinic
CWM Hospital, Ministry of Health, Suva
Tel: (679) 3215435
Fax: (679) 3231519

Malaysia

Dr Mymoon Alias
Deputy Director
Division of Family Health Development, Ministry of
Health
Level 7, Block E10, Parcel E
Federal Government Administrative Centre
62590 Putrajaya
Tel: 603 8883 4085, 601 2334 2828
Email: mymoon_kkm@hotmail.com

Dr Zainuddin Ali
Principal Assistant Director
Division of Disease Control
Ministry of Health
Level 7, Block E10, Parcel E
Federal Government Administrative Centre
62590 Putrajaya
Tel: 603 8883 4120
Email: drzainuddin@yahoo.com

Dr Md Rushdan Mohd Nor
Consultant, Gynaecologist/Oncologist
Hospital Alor Star, Kedah
Tel: 601 2472 6347
Email: drrushdan@yahoo.com.sg

Datin Rashidah Shuib, PhD
Director, Women's Development Research Centre
(KANITA), Universiti Sains Malaysia
11800 Minden, Pulau Pinang
Tel: 6012 983 8325, 6019 470 7720
Email: rashidahshuib@usm.my

Mongolia

Dr Ishnyam Davaadorj
Reproductive Health Senior Officer
Coordinator of the National Programme of
Reproductive Health
Ministry of Health
Olympic Street 2, Sukhbaatar District
Ulaanbaatar
Tel: (976) 99186009
Fax: (976 11) 311777
E-mail: capbuild@mongol.net

Dr Genden Purevsuren
Deputy Director
National Oncology Centre
National Centre for Cancer
Ulaanbaatar
Tel: 99187566
Email: purevsuren@yahoo.com

Dr Tsedmaa Baatar
Senior Registrar in Gynaecology Department of
Maternal and Child Research Centre
Post Box 538/13
Ulaanbaatar
Tel: (976) 99130429
Fax: (976 11) 324683
E-mail: dvsm@magicnet.com

Ms Gotov Uyanga
Head of the Laboratory
National Centre for Cancer
Apartment 3 #7, Khorov 18, Ulaanbaatar
Tel: (976) 751351
E-mail: cytol_uyanga@yahoo.com

Philippines

Miss Angelina Sebial
Director III, National Centre for
Health Promotion
Department of Health
San Lazaro Compound
Sta. Cruz, Manila
Tel: (632) 711 6305

Dr Lourdes Paulino
Medical Specialist IV and OIC
Women's Health Division
Department of Health
San Lazaro Compound
Sta. Cruz, Manila
Tel: (632) 456 4630
Fax: (632) 711 7846
E-mail: lourdespaulino@hotmail.com

Dr Cecilia Llave
Professor/Oncologist, Cancer Institute
University of the Philippines
PGH Compound
Manila
Tel: (632) 842 0032
Fax: (632) 523 3274

Dr Ma Cynthia Tan
Medical Specialist IV
Head of Gynaecology Section
Dr Jose Fabella Memorial Hospital
Lope de Vega St, Sta Cruz, Manila
Tel: 632 734 5561
Fax: 632 735 7146
Email: cfernandez_tan@yahoo.com

Viet Nam

Dr Nguyen Duc Vinh
Senior Officer
Reproductive Health Department, Ministry of Health
138A Giang Vo Street, Hanoi
Tel: (84 4) 8464 060

Ms Luu Thi Hong
Vice-Director, Reproductive Health
95/1 Xa Dan, Hanoi
Dr Le Tu Phuong Chi
Director, Tu Du Hospital
62 Nguyen Lam St, Ward 6, District 10
Ho Chi Minh City

Mr Bui Tho Thang
Journalist
366 Hoi Lan, Ba Thing, Hanoi
Tel: 084 8 328995
Fax: 084 8 329241

Dr Pham Ngoc Dinh
Vice-Director, National Institute of Hygiene and
Epidemiology
1 Yersin Street, Hanoi

Tel: +84 4 971 7783
Email: pndinh@nihe.org.vn

Dr Nguyen Huy Nga
Director, Preventive Medicine Department
Ministry of Health
138A Giang Vo Street, Hanoi
Tel: +84 4 734 1939
Email: huynga2000@yahoo.com

Temporary advisers

Dr Partha Sarathi Basu
Department of Gynaecologic Oncology
Chittaranjan National Cancer Institute
37 SP Mukherjee Road
Kolkata 700026
India
Tel/fax: (91 33) 2455 6020
Email: basupartha@hotmail.com

Prof. Punnee Pitisuttithum
Chief, Clinical Infectious Disease Research Unit
Mahidol University
Faculty of Tropical Medicine
The Faculty of Allied Health Sciences
420/6 Rajvithi Road, Phayathai,
Bangkok 10400
Thailand
Email: tmppt@mahidol.ac.th

Dr Khunying Kobchitt Limpaphayom
Professor Emeritus
Department of Obstetrics and Gynaecology
Faculty of Medicine, Chulalongkorn University
Rama 4 Road
Bangkok 10330
Thailand
Tel: (66 2) 243-3578
Fax (66 2) 243-3577
Email: lkobchitt@csloxinfo.com

Dr Supon Limwattananon
Faculty of Pharmaceutical Sciences
Khon Kaen University, Amphoe Muang
Khon Kaen 40002, and
International Health Policy Programme
Ministry of Public Health
Thanon Tiwanon
Nonthaburi 11000, Thailand
Tel: (66 43) 362090
Fax: (66 2) 5902385 (IHPP)
Fax: (66 43) 362090 (Khon Kaen)
Email: supon@ihpp.thaigov.net

Asst Prof. Surasak Angsuwathana
Director, Siriraj Reproductive Health Research and
Training Centre
Department of Obstetrics and Gynaecology
Faculty of Medicine
Siriraj Hospital, Mahidol University
Bangkok 10700
Thailand

Development partners

AusAID

Ms Alexandra Robinson
Manager, Health Taskforce, AusAID
GPO Box 887, Canberra, ACT 2601
Australia
Email: Alexandra.Robinson@ausaid.gov.au

JHPIEGO

Dr Ricky Lu
Medical Officer
1615 Thames Street
Baltimore, MD 21231-3492
USA
Fax: (410) 537 1473
Email: rlu@jhpiego.net

Ms Amy Kleine
Program Manager
Cervical Cancer Prevention Network Program
(CECAP)
1615 Thames Street
Baltimore, MD 21231-3492
USA
Fax: (410) 537 1473
Email: akleine@jhpiego.net

Ms Sharon Kibwana
Senior Program Coordinator
1615 Thames Street
Baltimore, MD 21231-3492
USA

Dr Jeffrey M. Smith
Regional Technical Director for Asia
19/45 Soi Polo #17B
Wireless Road, Patumwan,
Bangkok, 10330
Thailand
Tel: (66 8) 6779 0758
Email: jsmith@jhpiego.net
Web: www.jhpiego.org

FHI

Dr Graham Neilsen
Associate Director, Technical Support
Public Health Programmes
19th Floor, Tower 3, Sindhorn Building
130-132 Wireless Road, Kwaeng Lumpini Khet
Phatumwan
Bangkok 10330
Thailand
Tel: (66 2) 263 2300
Fax: (66 2) 263 2114
Email: Gneilsen@fhibkk.org

Dr Celine Daly
Director, Technical Support
Public Health Programmes
Asia-Pacific Regional Office
19th Floor, Tower 3
Sindhorn Building
130 Witthayu Road,
Bangkok 10330
Thailand
Tel: (66 2) 263 2300
Fax: (66 2) 263 2114
Email: CDaly@fhibkk.org

PATH

Mr Scott Wittet
Advocacy and Communication
Cervical Cancer Vaccine Project
1455 NW Leary Way
Seattle, WA 98107
USA
Tel: (206) 285 3500
Mob: (206) 390 0909
Email: swittet@path.org
Web: www.path.org

Dr Martha Jacob FRCOG, MPH
Senior Programme Manager HPV Vaccines
A-9 Qutab Institutional Area
New Delhi 110 067
India
Tel: 011 2653 0080
Fax: 011 2653 0089
Email: martha@pathindia.org

Dr Irma Ramos
Head, PATH Peru HPV Vaccine Project
Av. La Molina 1885, Lima 12
Peru
Tel: (511) 348 8612
Fax: (511) 348 8612
Email: iramos@path.org

Dr Emmanuel Mugisha
Plot 4 Hannington Road, First Floor
PO Box 24578
Kampala
Uganda
Tel: (256-41) 335500/4/6
Fax: (256-41) 335588/344059
Email: emugisha@path.org

Ngo Le Thu
Senior Project Manager
PATH, Floor 2, Hanoi Tower
49 Hai Ba Trung Street
Hanoi, Vietnam
TL: +84 4 9362215
Fax: +84 4 9362216
Mobile: +84 0912053346
Email: tlngo@path.org

Professional/other organizations

AOGIN

Prof Suzanne M Garland
President
Asia Oceania Research Organisation on Genital
Infections and Neoplasia (AOGIN)
Royal Women's Hospital
132 Grattan Street, Carlton
Victoria 3053
Australia
Email: suzanne.garland@rch.org.au

FIGO

Prof. Wichai Termrungruanglert
Associate Professor
Head of Gynecologic Oncology Unit
Department Of Obstetrics and Gynaecology
Faculty of Medicine
Chulalongkorn University
Bangkok
Thailand

ICO

Karly Louie, MSc
Cancer Epidemiology and Registration Unit
Institut Català d'Oncologia
Avda. Gran Via s/n Km. 2,7
08907 L'Hospitalet de Llobregat
Barcelona
Spain
Tel: +34 93 260 7812
Fax: +34 93 260 7787
E-mail: klouie@iconcologia.net

UICC

Dr Malcolm A. Moore
Head, UICC-Asian Regional Office
for Cancer Control
UICC-ARO Training Center
227/102-103 Lung Soon Ratchkan Road
Tambon Nai Muang, Amphoe Muang
Khon Kaen 40000

UN Agencies

UNFPA

Dr Saramma Thomas Mathai
Reproductive Health Adviser
UNFPA CST for South and West Asia
PO Box 5940 Shantha Bhawan Road
Jhamsi Khel, Lalitpur
Kathmandu
Nepal
Fax: (977 1) 552 7257
Email: mathai@unfpa.org

Dr Roushon Ara Begum
National Professional Project Personnel - RH
Shahid Milon Hall, Room # 201
DGHS, Mohakhali
Dhaka-1212
Bangladesh
Tel: 8816285
Mobile: 0189-228367
Email: roushon_unfpa@dekkko.net.bd
nppprab@brac.bdmail.net

Dr Chandani Galwaduge,
RH NPO, UNFPA
202-204 Baudhdhaloka Mawatha
Colombo-7
Sri Lanka

Ms Lubna Baqi
UNFPA Representative
202-204 Baudhdhaloka Mawatha
Colombo-7
Sri Lanka
Tel: 9411 258 0840
Fax: 9411 258 0698
Email: baqi@unfpa.org

Dr Delia Rarella-Barcelona
UNFPA Representative, Mongolia
UN House, UN Street 12
Post Office-46
Ulaanbataar
Mongolia 210646
Tel: 976-11-353501 ext 181
Fax: 976-11-353502
Email: barcelona@unfpa.org

Dr Shinetugs Bayanbileg
Technical Adviser on RH
UNFPA Mongolia, UN House
UN Street 12
Post Office-46
Ulaanbataar
Mongolia 210646
Tel: (976) 11 353501
Fax: (976) 11 353502
Email: bayanbileg@unfpa.org

WHO/HQ

Dr Michael Mbizvo
Coordinator, Director's Office
Dept of Reproductive Health and Research
20 Avenue Appia, CH-1211
Geneva-27
Switzerland
Tel: (41 22) 791 3305
Fax: (41 22) 791 4171
Email: mbizvom@who.int

Nathalie Broutet, MD, PhD
Controlling Sexually Transmitted
and Reproductive Tract Infections
Dept of Reproductive Health and Research
20 Avenue Appia, CH-1211
Geneva 27
Switzerland
Tel: (41 22) 791 33 36
Fax: (41 22) 791 41 71

Dr Katherine Ba-Thike
Area Manager for Asia and the Pacific
Dept of Reproductive Health and Research
20 Avenue Appia, CH-1211
Geneva-27, Switzerland
Tel: (41 22) 791 1965
Fax: (41 22) 791 4171
Email: bathikek@who.int

WHO/WPRO

Dr Narimah Awini
Short-term Professional, RH
WPRO
Manila
Tel: 632 528 9876
Fax: 632 526 0279, 526 0362, 521 1036
Email: dmarimahawini@wpro.who.int

WHO/SEARO

Dr Ardi Kaptiningsih
Regional Adviser
Reproductive Health and Research
World Health House
Indraprastha Estate
Mahatma Gandhi Marg
New Delhi 110002
Tel: (91 11) 2337 0804
Fax: (91 11) 2337 8510
Email: kaptiningsiha@searo.who.int

Dr Jerzy Leowski
Regional Adviser
Noncommunicable Diseases
World Health House
Indraprastha Estate, Mahatma Gandhi Marg
New Delhi, 110002
Tel: (91 11) 2337 0804
email: leowskij@searo.who.int

Dr Akjema Magtymova
Reproductive Health and Research
World Health House
Indraprastha Estate
Mahatma Gandhi Marg
New Delhi, 110002
Tel: (91 11) 2337 0804
Fax: (91 11) 2337 8510
Email: magtymova@searo.who.int

WHO Country Offices

Bangladesh

Dr Long Chhun
Medical Officer MPS/RH
House No 12, Road No. 7
Dhamondi Residential Area
Dhaka 1205
Tel: (880 2) 861 4653, 861 4654
Email: Chhunl@whoban.org

Bhutan

Mr Dorji Phub
National Programme Officer MPS
Kawangjansa,
Thimphu
Tel: (975 2) 332 864, 324 073
Email: phubd@searo.who.int

Indonesia

Mrs Imma Batubara
National Programme Officer, MPS/RHR
9th Floor, Bina Mulia 1 Building
Jl. H.R. Rasuna Said Kav
10 Jakarta Selatan
Tel: (62 21) 520 1165
Email: Batubara@who.or.id

Myanmar

Dr Gita Maya Koemarasakti
Medical Officer (MPS/RH)
Yangon International Hotel, 7th Floor
330, Ahlone Road
Dagon Township
Yangon
Tel: (95 1) 212 606, 212 608, 212 609, 212 365, 226
895 Ext: 124
Email: saktig.whomm@undp.org

Dr Nihal Singh
Medical Officer, EPI
7th Floor, Yangon International Hotel
330, Ahlone Road, Dagon Township Yangon
Tel: (95 1) 212 606/608/609
Mob: (95) 9514 6675
Email: nihals.whomm@undp.org

Nepal

Dr Jeffrey Partridge
Epidemiologist and Head
WHO Immunization Preventable Diseases (IPD)
P.O. Box 108, Chakupat
Lalitpur
Kathmandu
Tel: (977-1) 553-1831 Ext. 115
Mobile: (977) 985-104-1272
Fax: (977-1) 553-0150
Email: Partridgej@searo.who.int

Dr Vijaya Manandhar
NOO-RH
UN House, Pulchowk, Lalitpur
Kathmandu,
Tel: 00-977-1-5523 993
Fax: 00-977-1-5527 756
Email: manandharv@who.org.np

Dr Ilsa Nelwan
Medical Officer, PHA
UN House, Pulchowk
Lalitpur
Kathmandu
Tel: 00-977-1-5523 993
Fax: 00-977-1-5527 756
Email: nelwani@who.org.np

Sri Lanka

Ms Nina Hakamies
Junior Professional Officer
No. 226, Baudhdhaloka Mawatha
Colombo 7
Tel: (94 11) 2502 319, 2502 842
Email: NinaHakamies@whosrilanka.org
Thailand

Dr Somchai Peerapakorn
NPO for WHO Programmes
Permanent Secretary Bldg. No. 3
4th Floor, Ministry of Public Health
Tiwanon Road, Muang
Nonthaburi 11000
Tel: (66 2) 590 1524, 591 8198
GPN: 24801
Email: somchai@whothai.org

Timor-Leste

Dr Telma Joana Cortereal de Oliveira
Officer-in-Charge for MPS/RHR
UN House, Caicoli Street
Dili
Tel: (670 001) 212 9630 099 ext 2021
Email: telma.whodili@searo.who.int

Viet Nam

Dr Severin von Xylander
Medical Officer, RH
63 Tran Hung Dao Street
Hoan Kiem District
Hanoi
Tel: 844 943 3734, 943 3735
Fax: 844 943 3740
Email: who@vtn.wpro.who.int

Pharmaceutical Company (Observers)

Glaxo-Smith-Kline

Dr Yanee Hutagalung
GSK Bangkok

Dr Jovelle B Laoag-Fernandez, MD, PhD, FPOGS
Regional Medical Affairs and HPV Vaccines
APACHJ
150, Beach Road, Gateway West 22-00
Singapore 189720
Tel: +65 6232 81 13 (Direct)
Main: +65 6232 83 38
Fax: +65 6291 55 38
HP: +65 9833 45 10
Email: jovelle.b.laoag-fernandez@gsk.com

Merck Sharp & Dohme Ltd

Dr Gregg C Sylvester
Senior Director, Medical Affairs
Merck Vaccines
PO Box 4, Sumneytown Pike
West Point, PA 19486
USA
Tel: 1 215-652-2834
Fax: 1 215-993-3775
Email: Gregg_sylvester@merck.com

Ms Stephanie Merida-Franco
Regional Marketing Director, Gardasil
300 Beach Road, The Concourse, Singapore 199555
Tel: 65 6393.7671
Fax: 65 6296.0005
Email: stephanie_merida@merck.com

John Yang, MD
Director, Medical Affairs, Asia-Pacific
Merck Sharp & Dohme (Taiwan)
216, Tun Hua S Road, Section 2
14th Floor Taipei 106, Taiwan
Tel: 886 2 376.5577
Fax: 886 2 377.7363
Email: john_yang@merck.com

Digene

Mr Mark van Asten
General Manager, Asia Pacific
Digene Corporation, Suite 45
7 Narabang Way, Belrose, 2085
NSW
Australia
Tel. +61 2 99862011
Email: mark.vanasten@digene.com