Family Planning International
Discussion Paper
Cervical Cancer in the Pacific

Contents

Introduction

Family Planning International has noted an increased interest by donors and regional agencies in cervical cancer in the Pacific, in particular the HPV vaccine and its potential benefits in reducing the incidence of cervical cancer. This Discussion Paper has been written in order to stimulate dialogue, thinking and activity related to appropriate cervical cancer responses in the diverse countries and territories across the Pacific region. The point of this paper is not to provide a comprehensive or in-depth coverage of the issues and activity related to cervical cancer in the Pacific. This Discussion Paper is a beginning exploration and Family Planning International hopes that others will contribute to, and build on, this piece of work.

Family Planning is a key provider of cervical cancer prevention, including screening, in New Zealand. Family Planning also trains smear-takers and has trained health professionals in Pacific Island Countries such as Kiribati and Tuvalu. Family Planning led the clinical trials for the HPV vaccine in New Zealand and remains involved in ongoing research on the HPV vaccine. The organisation is also offering the vaccine as a component of the comprehensive sexual and reproductive health information and services provided by Family Planning. Family Planning International, is the international development unit of Family Planning, and works through projects and advocacy to promote sexual and reproductive health in developing countries.

This Discussion Paper covers cervical cancer, including its prevention and treatment, drawing heavily on research and programmes implemented in developing countries across the world. A generalised outline of what some Pacific Island Countries are currently doing to address cervical cancer in their countries is provided. Finally, ideas for further discussion are offered.

Information was gathered in two stages: a) a review of literature available from web-based sources, and b) interviews of key practitioners in Pacific Island Countries and territories. To obtain information for this Discussion Paper, a call was put out on the e-listserve 'Pacwin'. Individuals were contacted by Family Planning International through their response to this call, or because their details were put forward by others who saw the call for information. Consultation was carried out via initial email to introduce key guiding questions, and follow-up was undertaken by email and telephone. Practitioners represented Government and Non-Government stakeholders. Refer to Appendix One for details.

Family Planning International would like to sincerely thank all those who took the time to write and talk to us, and to comment on the draft versions of this Discussion Paper. We understand it can be challenging to respond to external requests for information, as these requests often come on top of already heavy workloads, so we are very grateful for the time given.

About Cervical Cancer

Cervical cancer is the second most common cancer found in women world-wide and is the primary cause of cancer-related deaths in women in low resource countries. Yet, cervical cancer is highly preventable and treatable, particularly when found early.

Of the estimated 500,000 new cases of cervical cancer found annually, 83% of these occur in developing countries. Of the estimated 274,000 annual deaths, 85% are in developing countries,[i,ii] where average mortality rates are reported at 11.2 per 100,000 women - almost three times the rate of developed countries.[iii] This burden of disease is primarily the result of weak and inadequately funded national health care infrastructures that cannot establish or sustain well-organised screening programs, which are instrumental in reducing the morbidity and mortality of cervical cancer.[iv]

Cervical cancer is caused by some types of the Human Papilloma Virus (HPV), which is the most common viral infection of the reproductive tract. In fact, HPV is recognised as the necessary cause of 99% of all cervical cancer. Other contributing factors are also associated with HPV persistence and the development of cervical cancer. These include[v]:

- immune suppression (for example, HIV positive people are at higher risk of HPV infection and persistence, and are infected by a broader range of HPV types)
- having a large number of babies
- early age at first sexual intercourse and first delivery
- long-term use of hormonal contraceptives
- cigarette smoking
- infection with other sexually transmissible infections (for example: chlamydia or herpes simplex virus type 2).

About Human Papilloma Virus (HPV)

HPV are a family of extremely common viruses that are prevalent worldwide: most sexually active women and men will be infected at some time in their lives. They are DNA viruses that infect skin or mucosal cells. There are more than 100 known HPV genotypes that can infect the genital area of men and women, including the penis, vulva and anus, and the lining of the vagina, cervix and rectum. Yet only 40 types can infect the genital epithelium – the skin cells lining the genital tract. Only 13 are cancer-causing. Types 16 and 18 are categorised as 'high-risk' for cancer, as they are responsible for approximately 70% of all cervical cancers globally. HPV types 31, 33 and 45 are also important high-risk types, although the proportion of cancers caused by these varies across geographical regions. Other HPV types (especially types 6 and 11) also cause genital warts and respiratory papillomatosis, which rarely end in death but cause significant morbidity and health care costs.
HPV is highly transmissible and peak incidence occurs soon after the onset of sexual activity. HPV is primarily sexually transmitted through penetrative and non-penetrative genital contact such as skin-to-skin genital contact.

Most HPV infections have no symptoms, and over 90% of HPV infections clear within two years without developing recognisable symptoms or complications. Only a small proportion of HPV infections persist and progress to cause cancer. Genital HPV

infections are a public health concern world-wide because persistent infection with certain types can lead to cervical cancer in some women.

Development of cervical cancer

Cervical cancer usually begins slowly with precancerous cell changes in the cervix. Even when cervical cancer develops, it tends to progress gradually. This means that invasive cervical cancer is highly preventable and treatable at its early stages. Early pathological cell changes in the epithelium of the cervix are called cervical intraepithelial neoplasia (CIN). These are the changes that can be seen using the various forms of screening described later in this Discussion Paper.

Cervical cancer has historically been graded and categorised according to the extent of CIN: CIN 1, CIN 2 and CIN 3, with CIN 3 being the most severe. However, this grading system has recently been changed to only two categories:

- Low-grade Squamous Intraepithelial Lesion (LSIL) (previously known as CIN 1). This is not a precancerous condition. It is an indication of the presence of HPV infection and it will have disappeared within two years in 90% of young women.
- High-grade Squamous Intraepithelial Lesion (HSIL) (encompassing the previous terms CIN 2, CIN 3 and carcinoma in situ[1]). These changes are precancerous and require treatment.

Due to the slow-developing nature of cervical cancer, there is a large window of opportunity to treat cell changes before they develop into invasive cancer. The average progression time from HSIL to invasive cancer is 15 years. Countries that have well-organized programs to detect and treat precancerous abnormalities and early stage cervical cancer can prevent up to 93% of cervical cancer. However, effective screening programs and follow-up of women with abnormal screening tests have been difficult to implement in low-resource and middle-resource settings. Mortality rates from cervical cancer are therefore much higher in the developing world.

Cervical Cancer in the Pacific

The Pacific is a diverse region geographically and culturally. The region includes 22 Countries and Territories, all of which are have different levels of human development. The region includes countries such as Australia and NZ, which both have comprehensive cervical cytology screening programs that have achieved significant reductions in cervical cancer incidence and mortality. For the majority of other countries and territories preventing and treating cervical cancer is an ongoing challenge, compounded by underinvestment in health systems, geographical isolation and small populations.

Like elsewhere in the world in the Pacific HPV types 16 and 18 are the most common high-risk types. These two high-risk HPV types are found most frequently in cervical cancers and HSIL precancerous conditions, although there are minimal data for many countries in the Pacific.[vi]

[1] Carcinoma in situ indicates that the whole depth of the skin layer of the cervix has been replaced by severely abnormal cells.

Current estimates indicate that across the Pacific, every year 2000 women are diagnosed with cervical cancer and 844 die from the disease. Cervical cancer ranks as the 6th most frequent cancer in the Pacific, and 3rd among women between 15 and 44 years of age.[vii] Outside Australia and New Zealand cervical cancer is the most common cancer affecting women in the Pacific.

This picture of cervical cancer sits alongside generally high rates of sexually transmissible infections, low use of family planning in many countries, high teenage pregnancy rates and a general lack of adequate sexual and reproductive health information and education provision for Pacific people.

Prevalence

Table 1 below shows estimates of incidence and mortality for cervical cancer in the Pacific. The variations across sub-regions in relation to absolute numbers of cases and deaths need to be put in perspective by population sizes. Melanesia has the largest population in the region, with over 8.3 million people, compared to Micronesia with approximately 550,000 people and Polynesia with approximately 650,000 people. Table 1 highlights the challenges faced by many of these countries in gathering data on cervical cancer, which also impacts on the ability to gain an accurate understanding of the situation across the region.

Table 1. Female population and estimates of incidence and mortality for cervical cancer[viii]

Region/Country	**Female Population**		**Incidence**		**Ranking**		**Mortality**	
	10-14 years	**15+ years**	**Cases**	**ASR[a]**	**All women**	**15-44 years**	**Deaths**	**ASR[b]**
Oceania Continent[c]	1.34	12.58	2002	11.5	6th	3rd	844	4.6
Melanesia	0.46	2.28	850	38.1	1st	1st	466	21.7
Fiji	0.04	0.29	113	33.4	1st	1st	61	18.7
Papua New Guinea	0.36	1.70	637	40.4	1st	1st	341	22.6
Solomon Islands	0.03	0.14	58	42.8	1st	1st	31	23.9
Vanuatu	0.01	0.06	14	21.7	2nd	3rd	8	12.1
Micronesia	0.03	0.19	19	9.4	4th	-	10	5.2
Kiribati	-	-	-	-	-	-	-	-
Marshall Islands	-	-	-	-	-	-	-	-
Micronesia	0.01	0.03	-	-	-	-	-	-
Nauru	-	-	-	-	-	-	-	-
Palau	-	-	-	-	-	-	-	-
Polynesia	0.03	0.21	0.21	28	2nd	1st	38	15
Cook Islands	-	-	-	-	-	-	-	-
Niue	-	-	-	-	-	-	-	-
Samoa	0.01	0.05	16	28	2nd	1st	8	15
Tonga	0.01	0.03	0.03	10.9[d]	-	-	-	-
Tuvalu	-	-	-	-	-	-	-	-

[a] ASR age standardized rate per 100,000 women
[b] Population in millions
Estimates were calculated using the direct method and the world population as the reference.
[c]Oceania data includes Australia and New Zealand
[d] WHO numbers

Data Availability

In the majority of Pacific Island Countries and Territories (PICTs), robust country based surveys are still to be undertaken. The 'HPV and Cervical Cancer in the World' 2007 report highlights the need for country specific and regional surveys. While WHO has conducted studies in Fiji and Tonga, figures for other PICTs have been extrapolated from neighbouring countries that have similar characteristics.[ix]

Prevention of Cervical Cancer

Cervical cancer can be easily prevented. A comprehensive prevention programme would involve the provision of the HPV vaccine, secondary prevention through screening with appropriate technology, and educating people about safer sex practices and cervical cancer in general. Each of these is described in more detail below.

The HPV Vaccine

The recent advent of the prophylactic HPV vaccine provides an excellent form of protection for up to 70% of high-risk cervical cancer-causing HPV types (ie: types 16 and 18). There are two HPV vaccines on the market that have shown excellent efficacy against persistent HPV infection and related cervical lesions among HPV-naive women (i.e. women who have never been exposed to the virus) aged between 16-24 years. Both of these vaccines target HPV types 16 and 18, which are responsible for 70% of cervical cancer cases world- wide. In addition one of these vaccines (the quadrivalent vaccine) also targets HPV types 6 and 11, responsible for the vast majority of genital warts.[x] The vaccines do require cold chain storage but can remain active outside the cold chain for up to three days.

Both vaccines require three separate doses over a six-month period at zero, one or two, and six months. Injections are administered intramuscularly. Due to the fact that HPV is sexually transmitted and is usually acquired within the first few years following the onset of sexual activity, administration of the vaccine is recommended for girls and young women prior to the onset of sexual activity. For this reason, the primary target group for routine vaccination is comprised of girls aged between nine and 13 years, who generally have not yet become sexually active. A secondary target group of girls and young women aged 14 to 26 years can also receive vaccination. However, since HPV vaccines are prophylactic, the largest impact of vaccination is expected to result from high coverage of young adolescent girls before first intercourse rather than from vaccinating older females, because a smaller proportion of older females would be naive to vaccine-related types of HPV before vaccination.[xi]

Depending on assumptions related to vaccination and screening programs, vaccination could reduce a woman's lifetime risk of cervical cancer by 35–80%. It must be highlighted that only 70% of cancer-causing HPV types are covered by the vaccination, so it does not completely eliminate the probability that women may develop cervical cancer but markedly reduces the risk. Models estimate that the reduction in the incidence of cervical cancer and mortality will be greatest in low income and middle-income countries where there is no screening or only limited screening for cervical cancer, such

as in several PICTs.[xii]

Currently several countries across the Pacific are investigating how to implement an HPV vaccination programme, including vaccine procurement, or have already trilled programmes of varying degrees of coverage. Evaluations of these will provide valuable lessons learned for future activity and findings need to be widely shared amongst the Pacific community. More information is contained below in the country sections. No response for this Discussion Paper was available from the Northern Marianas, yet that country has implemented an HPV vaccination programme. This is not detailed in the country section below.

Cost Effectiveness

Cost effectiveness is only one aspect to consider in making a decision on when and how to introduce an HPV vaccination programme, and it can be over-ridden by public and political imperatives. Yet, it is an important part of the equation in resource-constrained environments. Preliminary data indicate that HPV vaccines may be cost-effective in developing countries by decreasing morbidity and mortality associated with cervical cancer and saving health-care costs, including treatments for genital warts, pre-invasive cervical lesions and cervical cancer[xiii]. However, further investigation shows that this data is not uncontested. The World Health Organisation (WHO) presented its first position paper on the HPV vaccine in 2009, presenting findings from a review of articles related to cost-effectiveness analyses of a wide range of HPV vaccination programs compared with Pap smear screening. The subsequent WHO position was based on the WHO guideline that compares incremental cost-effectiveness ratios with per capita gross domestic product (GDP). This analysis concluded that nationwide administration of the HPV vaccine would be cost effective only in countries where GDP is high.

Although, at the same time several models indicate that HPV vaccination in low-income and middle-income countries where quality screening is not widespread may be cost effective if the cost per vaccinated girl (including three doses of vaccine and programmatic costs) is less than US$10–25. This cost is substantially lower than current costs in high-income countries. Already some middle-income Asian countries have negotiated price reductions for the vaccine, and the Global Alliance for Vaccines and Immunisation (GAVI) is exploring how to improve access to the HPV vaccine. Therefore, it seems highly likely that with negotiated price reductions, introduction of the HPV vaccine will be cost effective in low and middle-income countries.

Delivery Mechanisms

It is not routine in most developing countries to vaccinate girls of the age recommended for HPV vaccination. Therefore, there are currently no systems in place to reach these populations with a vaccination programme. Potential ways of getting the vaccine to girls and young women include school-based programmes, adolescent health programmes, community-based sexual and reproductive health programmes, or through special outreach mechanisms. For the greatest impact, partnerships across health systems are required, including collaborative/coordinated work across immunisation, non-communicable disease, adolescent health, and sexual and reproductive health programmes.

Communication and Education Issues

The introduction of the HPV vaccine requires careful consideration of the complex issues involved. The fact that HPV is a sexually transmissible infection may bring stigma

and discrimination with it, making it imperative that health promotion messages emphasise how common HPV is. Cultural and religious issues around youth sexuality will need to be carefully managed. Clear messages will need to be conveyed regarding the fact that three doses of the vaccine are required. For school programmes running educative campaigns that involve parents and teachers, it is important to develop their understanding of HPV and to gain their support and consent for their children to be immunised.

The HPV vaccination only covers 70% of cervical cancer. This means that in the absence of a screening programme in later life, young women who are vaccinated may still develop cervical cancer. Education about HPV, the vaccine, cervical cancer, the need for screening later in life, and sexuality and relationships should accompany a quality immunisation campaign.

As education and promotional campaigns will need to target parents, there are opportunities to raise awareness amongst women in the age-group where screening for cervical cancer is recommended (over age 30 years in low resource countries). This provides an opportunity for reaching these women with low-cost screening interventions and treatment, reducing their risks of developing cervical cancer.

Screening

Traditionally, global efforts to prevent cervical cancer have focused on screening women for abnormal cervical cells, treating these cells, and providing appropriate follow-up care. Successful screening programs go hand-in-hand with primary prevention strategies. There are three key screening methods available:

- cervical cytology, which includes the Pap smear and liquid-based cytology
- visual inspection with dilute acetic acid – vinegar - (VIA) or visual inspection with Lugol's iodine (VILI)
- HPV DNA test.

Currently in the Pacific, the most common of these available is the Pap smear, but in most countries there is no effective screening programme.

Studies show that in low-resource settings the optimal age group for screening is in 30-39 year-olds.[xiv] This is because the smallest amount of resources are utilised with the greatest positive impact. In settings where more resources become available, expanding the age-group of women screened to those aged 40 years and over will increase the positive impact.

Cervical Cytology

Screening through cytology involves collecting cells from the cervix, placing these on a slide, staining the slide, reading the slide and then reporting on the results. Pap smears use normal microscope slides with fixative. Liquid-based cytology is when the cervical cells are suspended in a liquid then sent to the laboratory for analysis. This latter method is more expensive than the conventional Pap smear and less common. Both cytological approaches involve a chain of inputs. "The process requires a doctor or nurse to collect the sample; sufficient and consistently available supplies and equipment to collect and process the smears; and a pathologist to confirm the positive readings (and randomly sampled negative ones), oversee the laboratory process and make the final report."[xv] It is essential that a technician reads a minimum number of smears to maintain competence

and this is not possible in any PICT except perhaps PNG and Fiji. This has led to PICTs sending their cervical smear samples overseas for reading – this is a good practical solution if cervical screening is to continue. Pap smear results can take days or weeks to be available. Once a Pap smear has been obtained by the health professional undertaking the original smear, if the result was abnormal the woman has to be recalled for further counselling and treatment. This can pose challenges for women who have to travel some distance to reach health services, such as women in many Pacific Island Countries and Territories.

While the Pap smear test has achieved tremendous success in developed countries that offer periodic, high-quality screening, Pap smear programs are complex and costly to run and have failed to reach a significant proportion of women in countries where health systems and infrastructure are poor. Screening by conventional cytology has had an impact in reducing cervical cancer rates in many developed countries, but this same impact has not been observed in developing countries.[xvi] Over the past thirty years, countries in Latin America and the Caribbean have implemented Pap smear screening programmes and few report reductions in cervical cancer similar to those in developed countries.[xvii]

Visual Inspection with Acetic Acid (VIA) and Visual inspection with Lugol's Iodine (VILI)

Studies across the world, including in Latin America, Africa, Thailand and China show that alternative screening methods to cytological screening are effective and that their sensitivity is at least the same, but often greater, than the conventional Pap smear.[xviii] Both methods involve swabbing the cervix either with a three to five percent vinegar solution (VIA) or using Lugol's iodine solution (VILI) prior to visual examination. The health care provider performing the test then determines whether the test result is positive or negative for precancerous lesions or cancer.[xix]

Many aspects of VIA/VILI make it an appealing approach for use in low resource settings. In most cases, costs associated with launching and sustaining VIA/VILI screening are lower than those associated with other methods. VIA/VILI is a relatively simple, easy-to-learn approach and only somewhat reliant upon infrastructure for its adequate performance. Equipment required is basic and simple. The approach does not need laboratory involvement; furthermore, non-physicians can perform the procedure, provided they have ongoing training. Although, training is not difficult or intensive, again contributing to the attractiveness of this approach in resource-poor settings. Given all of this, VIA/VILI has great potential for improving access to screening for cervical cancer in resource-poor countries. Crucially for developing countries, the results are available immediately, which means that women do not have to come back for a second visit. This is one of the greatest barriers to screening for women in developing countries. When needed abnormalities can not only be detected but also treated following VIA/VILI meaning women can be offered immediate treatment of cell abnormalities during the same visit.[xx]

HPV DNA Testing

The latest method for cervical cancer screening is HPV DNA testing. Samples can be taken from either the cervix or the vagina, opening up the possibility for self-sampling by women. Self-sampling is less sensitive than sampling taken by a trained health professional, but it has advantages in that speculum examination is not required and acceptability may be higher. Following sample collection (by a health professional or a

woman), a piece of technology is used to assess whether or not there is high-risk HPV DNA present. As HPV is extremely common in young women, almost all of whom spontaneously get rid of the virus within two years, it is important that resources are not wasted in testing for HPV in women under 30 years of age.

Women aged 30 or more who test positive for HPV DNA are much less likely to get rid of the virus. They need further intervention to ascertain whether or not there are precancerous changes to cervical cells. In developed countries, a colposcopy (examining the cervix using magnification), can easily be performed with follow-up treatment. However, in resource-poor countries this is generally not possible. In this case, the use of VIA/VILI can assist in exposing pathological cell changes. Treatment can then follow with cryotherapy.

HPV DNA testing has been shown to be highly effective in screening for cervical cancer and when combined with cryotherapy treatment, it leads to a greater reduction in the incidence of cervical cancer precursors than VIA/VILI approaches.[xxi] However, currently, the tests available are expensive and involve complicated processing in a laboratory, meaning the useability in resource-poor settings is limited. Having said that, a new rapid test is being developed for low and middle-income countries with a lower cost and will be portable. This test shows great promise and is expected on the market by about 2011.[xxii] However, the test will take 2.5 hours to reach a result so women will have to remain at the site until the result is known and treatment can be offered.

Health Promotion Messages and Safer Sex

As outlined previously, certain sexual and reproductive health related experiences that individuals have are likely to contribute to the persistence of HPV and possibly progression to cancer. These include having many children, early age of first birth and infection with other sexually transmissible infections. All of these risk factors can be reduced somewhat through the use of contraception and condoms, or through delaying first intercourse, abstaining from sexual relations, or getting tested and treated for sexually transmissible infections. Provision of quality, confidential sexual and reproductive health information and services to all people, regardless of age, marital status or sexual orientation, is a key strategy for the prevention of cervical cancer.

However, it is important to note that HPV is extremely common and highly transmissible. The use of condoms has not been shown to markedly reduce the prevalence of cervical cancer at a population level. Also, people usually do not know that they have HPV and the high risk types associated with cervical cancer are almost always asymptomatic ie: they have no symptoms at all. Therefore, overall safer sex is not an effective solution for preventing cervical cancer.

Health promotion messages should also include good nutrition and the avoidance of tobacco use. Alongside these, specific educative messages for women need to be widely disseminated. These relate to screening and treatment opportunities, as well as signs and symptoms of advanced disease.

Treatment

In developed countries, a range of technologies are readily available to guide treatment interventions. Colposcopy is used to view the cervical architecture easily and then either a biopsy is taken and treatment is delayed until the result is known, or immediate treatment is undertaken without confirming the diagnosis.

Treatment of pre-cancer falls into two main groups:

- removal of the abnormal area by freezing or burning. A modification of the latter is called Large Loop Excision of the Transformation Zone (LLETZ) or Loop Eectrosurrgical Excision Procedure (LEEP)
- removal of a larger amount of tissue when the abnormality extends up into the cervix - known as cone biopsy.

These treatments result in a greater than 90% cure rate.

If invasive cancer is found, treatment involves surgery and often radiotherapy.

In low-resource settings[xxiii] some of the investigations and treatment for pre-cancer are highly resource intensive, meaning they are not readily available in the majority of countries. However, freezing (cryotherapy) is a relatively simple procedure, which can be used to destroy abnormal cervical tissue, depending on the severity, location and size of the affected area.

Cryotherapy uses extremely low temperatures to destroy the abnormal tissue. It needs no electricity and is effective even where resources, health supplies and infrastructure are severely limited. Although, cryotherapy equipment would still need to be maintained, which can pose challenges in low-resource settings. Health professionals require training but nurses and midwives can undertake this treatment. Cryotherapy can be used following VIA/VILI and HPV DNA testing, to enable full screening and treatment during one visit by a woman to the health service.

In the case of HPV DNA testing, even if precancerous lesions are not detected but the presence of high-risk HPV DNA is, women without contraindications can undergo cryotherapy, particularly if it is highly unlikely they will return to health care for follow-up care.[xxiv] In this system, some women may be treated unnecessarily but there is a low rate of complications following this procedure.

LLETZ or LEEP require much more training and expertise and so would usually be undertaken by specialist doctors. They have the advantage of allowing tissue to be removed for analysis, reducing the possibility that advanced cancer will go unnoticed. (This poses the same problems of reading cervical smears in countries where few procedures would be undertaken.) Again equipment would need to be maintained, as well as more specialist training and competency.

Key Points

- Addressing cervical cancer requires an integrated approach to cervical cancer that includes HPV vaccination with screening in women over the age of 30 years, as well as health promotion messages. This can be linked with or integrated into other primary health care activities.
- Evidence from resource-poor countries shows that the most efficient and effective approach to screening for and treating cervical cancer precursors in low-resource countries is to screen using VIA/VILI or HPV DNA testing, followed by cryotherapy if necessary. This approach can be carried out by nurses and midwives in a single visit, with minimal equipment and training required.
- Early efforts show that the cost for HPV vaccinations can be negotiated down and further work on this will no doubt reap more cost reductions for low and middle-income countries. This will make the HPV vaccination more cost effective.
- Screening is still required even where the HPV vaccination has been rolled out, particularly for non-vaccinated women as they enter their thirties, and for detection of the 30% of cervical cancer that the vaccination does not prevent.
- Safer sex messages and education about HPV, cervical cancer and screening are important to disseminate widely, with careful consideration of cultural and religious sensitivities (but not letting these impact on the accuracy of the public health message being conveyed). While these messages have limited ability to significantly reduce the incidence of cervical cancer they are an important component of a broader approach to improving sexual and reproductive health in general.

What is Already Being Done in the Pacific?

Service Delivery at Country Level

There is limited literature to draw upon to ascertain the level and quality of cervical screening programs and services available to women in the Pacific. The following information has been gathered by Family Planning International after individuals in each country expressed their willingness to offer information. These people have been very generous with their time and Family Planning International would like to thank them for this. Each country is different and therefore these responses vary in their coverage of the issues. As stated earlier, this paper does not provide a comprehensive or deep coverage of the issues in all Pacific Island Countries and Territories (PICTs): it is merely a beginning. Greater resources will need to be invested in order to gain a thorough understanding of the situation in each country or territory, and to develop appropriate responses.

What is common amongst these responses is that they emphasise that the challenges many PICTs face in trying to deliver effective cervical cancer prevention and treatment programmes are similar to those faced in other low-resource countries. Many PICTs have to send Pap smears abroad for diagnosis, such as to Fiji or Australia. VIA/VILI is not in use, although a trial is being discussed in PNG. It is obvious that although people are working hard to address cervical cancer in their countries, they need much greater, coordinated and sustained support, drawing on lessons learned in other similar countries

across the world.

Tuvalu

Tuvalu has a cervical screening program screening women aged between 15-65 years of age. Population coverage is quite extensive covering all eight islands and targeting 2,000 women. However, to date only 312 specimens have been collected while management of the few abnormal cases has had to be deferred until 2010.

Each of the Outer Islands Medical Centres (8) are staffed by a Senior Nurse (also Midwife), Nurse, Nurse Assistant, Sanitation Officer. The Nurse Midwife is responsible for this programme. They collect smears and send slides to Princess Margaret Hospital (main hospital) where slides are packaged and sent to Colonial War Memorial Hospital (CWMH) lab in Fiji. Results are then sent back to Tuvalu in due time. Currently, women with abnormal smears need to wait for a visiting specialist to be colposcoped, and to have further treatment options explored. Tuvalu has a Medical Treatment Scheme to provide for cases that require overseas transfer for further investigation or treatment. Tuvalu does not provide in-country treatment.

Tuvalu has highlighted the difficulties faced in encouraging women to have a smear. Women lack understanding of the consequences and complications of cervical cancer, and cultural/sexual beliefs have also been identified as barriers. The attitude of women towards this programme has not changed since the last screening in 1995. Other challenges include the unavailability of alternative tests to the smear, and issues of diagnosis, treatment, and follow up, as well as adequate resources and skilled staff.

The Tuvalu Ministry of Health has indicated a keen interest to trial the HPV vaccine. Several enquiries with regional organisations such as UNFPA and UNICEF have been made. A review on available options to purchase the vaccine is currently underway.

Tonga

Although Tonga does not currently have a national policy on cervical screening, the MOH conducts pap smear screening as part of their services, and it offers chemotherapy and surgery. In 2006 the Tonga Family Health Association (TFHA) commenced screening with slides sent overseas for interpretation. For a time the programme was discontinued due to lack of infrastructure and logistical support, however, more recently the TFHA recommenced its pap smear services and sends its slides directly to a laboratory in Melbourne at minimal cost to cover freight. According to TFHA there are significant gaps and challenges in implementing a comprehensive cervical screening program.

In 2007 to aid in decision-making about new vaccine introduction a WHO consultant estimated the disease burden of cervical cancer, and performed a cost benefit analysis of HPV vaccine in the Kingdom of Tonga.[2] Cases and deaths from cervical cancer and HSIL were identified from clinicians, the cancer registry, and hospital and laboratory records at Vaiola Hospital, whose catchment area is the island of Tongatapu, where

[2] Consultant Report for WHO on the burden of cervical cancer and the cost benefit analysis of HPV vaccine and the evaluation of Hib disease post Hib vaccine introduction in the Kingdom of Tonga, 2007.

approximately 70% of the population lives. Inpatient treatment costs for HSIL and cervical cancer cases were also estimated.

From 1986 to 2007 there were 55 cases of cervical cancer and more than 25 deaths. The estimated annual age adjusted incidence was 10.9 per 100,000 (95% confidence interval (CI) 7.9-15.2) for cases identified from 1996 onwards. This rate is likely to be an underestimate. The case fatality rate would be as high as 80-90%. Most women are under 60 years old with over 14% being of child-bearing age at diagnosis.

The total annual cost for the government for inpatient and overseas treatment of HSIL or cervical cancer is estimated to be Tonga Pa'anga[3] 21,494. This equates to Tonga Pa'anga 5607.18 per case. This is likely to be a considerable underestimate as extracting information from medical records was incomplete. Cervical cancer is the third most common cancer in women in Tonga. There are 3-4 new cases of cervical cancer annually with the annual incidence of cervical cancer estimated to be 10.9 per 100,000 women 20 years of age or older with the actual incidence likely to be higher. The incidence is similar to Pacific Islanders living in New Zealand but lower than Fiji.

The WHO has not yet arrived at a solution to address vaccine cost although the Ministry of Health (MOH) is keen to have this vaccine integrated into their routine vaccination programme.

Kiribati

Kiribati currently has no national policy on cervical cancer in place and does not have a formal cervical screening program. However, Kiribati Family Health Association (KFHA) provides a pap-smear service with a minimum fee. The Kiribati Ministry of Health also provides this service.

KFHA have an agreement with a Melbourne based laboratory, the Victorian Cytology Service, where pap-smear slides are sent for testing. The small fee that women pay at KFHA to get a smear done assists the association to send slides on a regular basis. It is unclear how long it takes for results to arrive at KFHA or the associated challenges experienced with patient follow-up when a result shows abnormal cell changes. The HPV vaccine is not available in the country.

Traditional medicine is the main form of treatment that women in Kiribati would initially opt for before seeking medical attention. KFHA cases are usually put on syndromic treatment but are often referred to the gynaecological doctor at the Hospital.

Challenges to providing comprehensive cervical cancer-related information and services are similar to other PICTS, including geographical and transportation barriers. Clinics situated on outer islands do not provide pap smear services or raise awareness on the importance of early detection for cervical cancer.

[3] 1 Tonga Pa'anga = 0.73 NZ dollar (on 11 December 2009).

Fiji

Fiji has national cervical screening guidelines. The national Pap smear screening 'programme' commenced in 1995. There is no formal national cervical cancer policy although Pap smears are recommended once every three years in Fiji in women of child bearing age.

In 2007, the WHO supported the Ministry of Health in Fiji, in collaboration with University of Melbourne to conduct disease burden studies analysing national cervical cancer biopsy and cytology data from 2004-2007. This study found a very high burden of cervical cancer with 74 percent of the cervical cancer cases tested being HPV types 16 and 18.

Cervical cancer is currently the leading cause of cancer, not only in women in Fiji, but for all cancer cases and deaths in the country, according to MOH data. There are over 100 new cases diagnosed in women each year and most of these women die. The age of diagnosis on average is 50 years of age with up to half of the cases being diagnosed in the childbearing age group (15-45 years). The average time from diagnosis to death is six months. Hence these women present to doctors very late at a stage in the disease process. Although these are conservative estimates, these rates are one of the highest in the South Pacific region. They are at least five times higher than the US, Australia, and New Zealand.[xxv]

Furthermore, this report analysed over 70,000 Pap smears taken over four years and found that only approximately eight percent of eligible women have had a Pap smear taken. This appears to be an additional reason for introducing the HPV vaccine

The Ministry of Health offers Pap smear screening in all three of its divisional hospitals, and at sub-divisional hospitals, health centres and nursing stations in rural and isolated regions. The service is also available through local general practitioners and the private hospital.

Slides taken in divisional and rural areas are sent to divisional hospital laboratories for reading. Results are sent back to where they were sent from and are conveyed to clients. Clients with abnormal results are referred to gynaecologicy clinics in the district hospitals for colposcopy. Services available are surgery and chemotherapy. Fiji does not offer radiotherapy treatment and all cases requiring this kind of treatment are usually referred abroad.

In September 2008 the Fiji Ministry of Health commenced a national HPV vaccination campaign. A generous donation of 100,000 doses of Gardasil, a quadrivalent HPV vaccine, was made available by a pharmaceutical company. After consultation with leading Fiji gynaecologists, paediatricians, senior public health staff, WHO, UNICEF, donors, the Ministry of Education, and NGOs such as Marie Stopes International, the Fiji Cancer Society and the Fiji Women's Rights Movement the donation was accepted. Girls in the last four years of primary school (school years four to seven) were targeted via a school-based immunisation programme. Parental consent was required prior to vaccination following an information brochure being sent home to parents. An extensive public awareness campaign was undertaken through the media. Approximately 60% of girls aged between 9 and 12 years received their first dose. Second and third doses are still to be given via a mop-up campaign. In addition, all women over nine and up to 20

years of age were offered the vaccine over a defined time period. This programme will be formerly evaluated later in 2009.

The launch of the HPV immunisation campaign in September 2008 triggered some public debate highlighting the need for accurate and comprehensive information to be provided to the general public. The Ministry of Health is interested in continuing a school based HPV programme and is awaiting the outcome of the evaluation to guide the next steps.

The WHO is currently working together with the Fiji Ministry of Health to arrive at a financial solution that enables the Government of Fiji to integrate the vaccine into its routine immunization program.

Papua New Guinea

PNG does not have a national cervical screening policy nor does it have a national pap smear program. Having such a policy is viewed as ineffective for rural women because of the difficulty associated with follow-up screening and treatment. PNG is, however, considering starting up a screen and treat VIA program with cryotherapy treatment.

PNG like many other countries in the Pacific has a limited number of trained specialists available, with only ten gynaecologists in the entire country, to serve a population of over six million people. These specialists face high demand and are very busy with emergency work, as well as running of Obstetric and Gynaecology units. As a result, it would not be an effective use of scarce specialist time to do colposcopies. PNG also does not have the histological back-up capability to handle the cervical biopsies that this would generate.

MeriPath is a not-for-profit organisation set up exclusively to provide a cervical screening service for the women of Papua New Guinea. It was established eight years ago at St Mary's Hospital, Vunapope, in East New Britain Province with the support of German obstetrician and gynaecologist Dr Birgitta Bauer. Since its beginnings the programme has drawn huge interest from many health facilities in PNG and now receives pap smears from over 20 centres in 14 provinces, including various church and provincial hospitals, private hospitals and company health centres. The operational expenses of the programme are funded by Caritas Australia (with support from AusAID) and follow-up biopsies are processed and reported at the Sydney Adventist Hospital. Questions about treatment were not asked while gathering information for this Discussion Paper.

While the HPV vaccine is not yet widely available, PNG is in the process of putting in an application to the Global Alliance for Vaccines and Immunisation (GAVI) and the Merck Access program to obtain some HPV vaccine for a school based program, and for starting a research programme into potential infant use. The Ministry of Health is supportive of this initiative and are in the process of submitting a research proposal through various ethical committees of Government and the University of Papua New Guinea.

Solomon Islands

Solomon Islands currently have no national policy and cervical screening program in place. The Ministry of Health will, however, be working on a Reproductive Health Policy within which the prevention of cervical cancer will be included.

Pap smears are available to all women upon request. The smear is collected by nurses who have been trained to collect pap smears. These services are available at national and provincial level, at the gynaecology department at the National Referral Hospital (NRH) and through a couple of private practices in Honiara (capital city). While the service is widely available, quite often the limitation is availability of pap smear kits and fixatives, especially in the provinces. All pap smears are sent overseas to Brisbane for results and it can take up to, or over, six weeks for results to come back. This arrangement between the Ministry of Health and the Brisbane based laboratory means that a fixed quota of pap smear slides can be reviewed free of charge. After that the government has to meet the cost, which can present a barrier to timely receipt of test results.

It seems that several laboratory staff from the NRH have been sent abroad for training but it is unclear why the tests remain unable to be read in country. Training of laboratory staff to read and to provide pap smear reports to a level of accreditation recognized by a cytology laboratory overseas for quality control would be highly beneficial, presuming enough smears could be carried out to ensure that technicians can maintain an appropriate level of competency (in a country of approximately 500,000 people).

Follow-up services are supposed to be done at the national referral hospital but quite often women are lost to follow-up, especially those from the provinces. Education for women about the importance of cervical screening is not usually presented on its own but integrated together with the prevention of sexually transmissible infections.

Treatment options are limited. Depending on the stage of the cervical cancer, women can receive the LLETZ procedure, followed by regular pap smears. However, the next option for treatment tends to be a total abdominal hysterectomy and this is the most performed procedure for cervical cancer. In a few instances cases are sent to St Vincent Hospital in Sydney, Australia, for radiotherapy treatment. However, this option is very much dependent on the result of the biopsy and the possibility of a good treatment outcome. One contributing factor to the limited treatment options is the lack of gynaecologists in Solomon Islands. Currently, there is only one. As with many other professions in Solomon Islands, there are a limited pool of qualified professionals.

While the HPV vaccine has not yet been made available, it is likely that Solomon Islands would be interested in having this made available, depending on the cost of the vaccine.

Like other PICTs there are a limited number of resources available to implement an effective cervical cancer program. This includes the lack of appropriate diagnostic, treatment management and follow-up protocols, minimal technical expertise and specialist infrastructure.

Vanuatu

No respondents were sourced from Vanuatu for this Discussion Paper. Cervical cancer is anecdotally very common in Vanuatu, with most patients presenting with a late-stage untreatable disease. Treatment options are limited to surgery in the capital Port Vila. The Ministry of Health would like to take greater action to prevent cervical cancer.

Currently there is a team from the University of Queensland working closely with the Vanuatu Government to trial a program for effective delivery of HPV cancer vaccines to schoolgirls in resource-poor settings. Headed by HPV cancer vaccine pioneer, Professor Ian Frazer, the team aimed during 2009 to vaccinate and educate 1000 girls aged 10 to 12 years of age.

The HPV vaccine is being administered to young girls by a district nurse through school and community groups in rural villages and urban centres. Cervical cancer screening is also being offered to their mothers, if over 30 years of age, as part of a separate program The vaccination program is being promoted through newspapers and radio. In addition, the girls are given a photo ID card with their first vaccine, and some are also given a coloured silicone wristband as a visible reminder to follow up with their second and third shots, with the writing "Don't forget your next HPV vaccine" written in English and Bislama. The study will help determine the efficacy of different strategies for reminding young girls to come back for their second and third doses, and will help the Vanuatu Health Ministry develop an effective program for cervical cancer control for Vanuatu. The results will also be useful for other PICTs as they consider implementing HPV vaccination and screening campaigns.

What More Can Be Done?

While it is beyond the scope of this paper to provide a comprehensive picture of the burden of cervical cancer in the Pacific, some preliminary conclusions can be arrived at based on the information available. The burden of cervical cancer is significant across the Pacific, and the challenges for fragile health systems to respond to, and address this, in an effective manner are apparent. Efforts to address prevention and treatment of cervical cancer need to encompass HPV vaccination, screening and treatment, as well as health promotion messages.

Lessons learned from across the world, including in low-resource settings, show that there are highly effective alternative methods for screening and treating cervical cancer to those used in resource-rich environments. Providing these alternatives hand-in-hand with awareness and vaccination campaigns may have substantial benefits for women of all ages, as well as saving health care costs in the long-term.

There are many opportunities to support and assist PICTs to enhance their cervical cancer programmes, saving women's lives.

Ideas for Further Discussion

1. HPV vaccines should be introduced as part of a coordinated strategy to prevent cervical cancer and other HPV-related conditions. Along with HPV vaccines, this strategy should include information about the diagnosis and treatment of precancerous lesions and cancer, screening and treatment, and education about reducing behaviors that increase the risk of acquiring HPV infection.

2. Obtain and widely disseminate lessons from Vanuatu, the Northern Marianas' and Fiji's experience on their HPV vaccination programmes.

3. A Pacific regional meeting should be convened to share lessons learned from HPV programmes already implemented in various PICTs and to provide further advice and discussion on how PICTs can approach cervical screening and HPV immunization. (The recent November 2009 WHO Expert Group meeting on cervical cancer made a similar recommendation, although the report is not yet complete.)

4. If not already done, a thorough mapping exercise could be undertaken to explore the level of services offered to women for screening and treatment and produce in-depth analysis on areas to further engage. This could be a component of the Pacific regional meeting suggested in point three above.

5. Promote VIA/VILI followed by cryotherapy as a viable alternative to Pap smears, providing training and ongoing support to health professionals. In fact, given the evidence from other countries, VIA/VILI and cryotherapy appears to be the screen and treat approach of choice in middle and low-resource settings such as in many PICTs. Scope, design, implement and evaluate a pilot screen and treat approach.

6. Explore what steps can be taken to strengthen relationships with key national, regional and international actors. In particular with those that have significant experience in research of appropriate approaches to cancer prevention and treatment programs in low-resource countries.

7. Strengthen the capacity of Family Health Associations in the Pacific that offer screening services to improve their existing cervical cancer prevention and treatment programs, data collection methods and their ability to conduct research.

8. Strengthen data collection across the region and within countries. This must be done in collaboration with governments and those agencies that are leading on the issue and health data collection already, such as WHO, UNFPA and SPC.

9. Integrate cervical cancer messages into safer sex messages and education.

Appendix 1

List of those contacted

Name	Role	Organisation and/or Country
Dr Xiaojun Wang	Technical Officer Expanded Programme on Immunisation	WHO Regional Office for the Western Pacific
Dr Liu Yunguo	Regional Adviser, Gender, Women and Reproductive Health	WHO Regional Office for the Western Pacific
Professor Glen Moala	Head of Obestetrics and Gynaecology	University of PNG
Dr Aumea Herman	Director of Public Health	Cook Islands Ministry of Health
Dr May Aung	Gynaecologist	Cook Islands
Dr Mere Turangabeci	Gynaecologist	Oxfam Clinic, Fiji
Dr Stephen Mafoa Homasi	Director of Health	Tuvalua Ministry of Health
Dr Miliama	Obstetrician	Tuvalu
Nancy Edward	HIV/STI coordinator for Pohnpei State	FSM
Dr Marie Lanwi	Assistant Secretary for Primary Health Care and Hospital Services	Marshall Islands Ministry of Health
Dr Silina Fusimalohi	Director	Tongan Family Health Association
Joycelyn Songsong	Breast and Cervical Cancer Program Manager	Northern Marianas
Mrs Nnakina Ioteba	Director	Kiribati Family Health Association
Dr Junilyn Pikacha	Director of Reproductive Health Division	Solomon Islands Ministry of Health
Dr James Fong,	Head Gynaecologist	CWM Hospital, Fiji
Dr Fiona Russell	Research Coordinator, Fiji Pneumococcal Project. Has also done consultancy work on cervical cancer.	Centre for International Child Health, Dept. of Paediatrics, University of Melbourne, Australia.

Many thanks to individuals who commented on each country summary. Thanks also to Dr. Wame Baravilala, Reproductive Health Advisor at the UNFPA Office of the Pacific and Dr. Christine Roke, Medical Advisor at Family Planning for commenting on the final draft of this Discussion Paper.

Vena Paia carried out the research and compiled the initial draft of this Discussion Paper. Family Planning International is very grateful to Vena for volunteering to do this piece of work.

References

[i] WHO (2007) 'Human Papillomavirus and HPV vaccines: Technical information for policy-makers and health professionals', World Health Organization, Switzerland, pp. 4 - 8.

[ii] University of Melbourne's Centre for International Child Health & Australian National University's National Centre for Epidemiology and Population (2007) 'Mission Report: Burden of cervical cancer and cervical intraepithelial neoplasia in Fiji (2004-2007)', http://www.health.gov.fj/Public%20Health/Documents/Ca%20of%20Cx%20WHO%20final%20report%20IL_141207.pdf, visited on 14th December, 2009, p. 6.

[iii] PRB (2004) 'Removing barriers to early detection key to cervical cancer prevention', http://www.prb.org/Articles/2004/RemovingBarrierstoEarlyDetectionKeytoCervicalCancerPrevention.aspx, visited on, 14 December, 2009

[iv] University of Melbourne's Centre for International Child Health & Australian National University's National Centre for Epidemiology and Population (2007) 'Mission Report: Burden of cervical cancer and cervical intraepithelial neoplasia in Fiji (2004-2007)', http://www.health.gov.fj/Public%20Health/Documents/Ca%20of%20Cx%20WHO%20final%20report%20IL_141207.pdf , visited on 14th December, 2009, p. 6.

[v] WHO, PATH & UNFPA (2007) 'Cervical Cancer, HPV and HPV Vaccines: Key points for policy-makers and health professionals', World Health Organization, Switzerland

[vi] Garland, SM., Brotherton, J.M., Skinner, SR., Pitts, M., Saville, M., Mola, G., & Jones, R.W., (2008) 'Human Papillomavirus and Cervical Cancer in Australasia and Oceania: Risk-factors, Epidemiology and Prevention', *Vaccine*, Vol. (26), Supplement 12, 19 August 2008

[vii] Castlellsague, X., de Sanjose de, S., Aguado, T., Louie, K.S., Bruni, L., Munoz, J., Diaz, M., Irwin, K., Gacic, M., Beauvais, O., Albero, G., Ferrer, E., Byrne, S., & Bosch, F.X., (2007) 'HPV and Cervical Cancer in the World 2007 Report' *Vaccine,* Vol. (25), Supplement. 3, 1 November, 2007.

[viii] Ibid.

[ix] Ibid.

[x] WHO & UNFPA (2006) 'Preparing for the introduction of HPV vaccines: policy and program guidance for countries', World Health Organization, Switzerland, p.3.

[xi] WHO (2007) 'Human Papillomavirus and HPV vaccines: Technical information for policy-makers and health professionals', World Health Organization, Switzerland

[xii] WHO (2009) 'Weekly Epidemiological Record', 10 April 2009, 84th Year, No. 15, 2009, 84, World Health Organization, pp. 117–132.

[xiii] IPPF (2007) 'IMAP Statement on cervical cancer prevention and the potential role of human papilloma virus (HPV) vaccine', IPPF Medical Bulletin Vol. (41), No. 3 September 2007.

[xiv] Sherris, J., Wittet, S., Kleine, A., Sellors, J., Luciani, S., Sankaranarayanan, R., & Barone, M.A.,,(2009) 'Evidence-Based, Alternative Cervical Cancer Screening Approaches in Low-Resource Settings' *International Perspectives on Sexual and Reproductive Health*, Vol. (35), No.3 September 2009

[xv] Ibid.

[xvi] PAHO, PATH, Ministerio de Salud, & Direccion Regional de Salud San Martin, (2006) 'Cervical Cancer in Peru: Lessons learned from the TATI demonstration project', Pan American Health Organization, Washington DC, 2006, p. 1

[xvii] Sherris, J., Wittet, S., Kleine, A., Sellors, J., Luciani, S., Sankaranarayanan, R., & Barone, M.A., (2009) 'Evidence-Based, Alternative Cervical Cancer Screening Approaches in Low-Resource Settings' *International Perspectives on Sexual and Reproductive Health*, Vol. (35), No.3 September 2009

[xviii] Ibid.

[xix] PAHO, PATH, Ministerio de Salud, & Direccion Regional de Salud San Martin, (2006) 'Cervical Cancer in Peru: Lessons learned from the TATI demonstration project', Pan American Health Organization, Washington DC, 2006

[xx] ACCP (2002) 'Visual screening approaches: Promising Alternative Screening Strategies', Cervical Cancer Prevntion Fact Sheet, http://www.path.org/files/RH_visual_screening.pdf, visited on 14 December, 2009

[xxi] Sherris, J., Wittet, S., Kleine, A., Sellors, J., Luciani, S., Sankaranarayanan, R., & Barone, M.A.,,(2009) 'Evidence-Based, Alternative Cervical Cancer Screening Approaches in Low-Resource Settings' *International Perspectives on Sexual and Reproductive Health*, Vol. (35), No.3 September 2009

[xxii] Ibid.

[xxiii] ACCP (2002) 'Visual screening approaches: Promising Alternative Screening Strategies', Cervical Cancer Prevntion Fact Sheet, http://www.path.org/files/RH_visual_screening.pdf, visited on 14 December, 2009

[xxiv] Sherris, J., Wittet, S., Kleine, A., Sellors, J., Luciani, S., Sankaranarayanan, R., & Barone, M.A.,,(2009) 'Evidence-Based, Alternative Cervical Cancer Screening Approaches in Low-Resource Settings' *International Perspectives on Sexual and Reproductive Health*, Vol. (35), No.3 September 2009

[xxv] University of Melbourne's Centre for International Child Health & Australian National University's National Centre for Epidemiology and Population (2007) 'Mission Report: Burden of cervical cancer and cervical intraepithelial neoplasia in Fiji (2004-2007)', http://www.health.gov.fj/Public%20Health/Documents/Ca%20of%20Cx%20WHO%20final%20report%20IL_141207.pdf , visited on 14th December, 2009, p. 6.