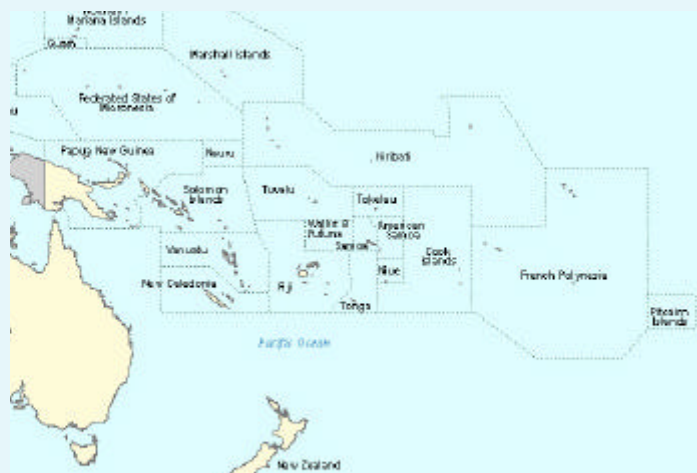


# SECOND GENERATION SURVEILLANCE SURVEYS OF HIV, OTHER STIs AND RISK BEHAVIOURS IN 6 PACIFIC ISLAND COUNTRIES (2004-2005)

*Implemented by the  
Ministries of Health  
of:*



- Fiji
- Kiribati
- Samoa
- Solomon Islands
- Tonga
- Vanuatu

*With the support of:*

**the World Health Organization Western Pacific Regional Office, the Secretariat of the Pacific Community,  
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# Table of Contents

Acknowledgments .....	2
List of Tables .....	6
Abbreviations .....	8
1. Pacific Region .....	9
Introduction .....	9
Funding Arrangements .....	10
Indicators .....	10
Objectives .....	13
HIV/AIDS and STI Case Reports .....	13
Second Generation HIV Surveillance Survey Methodology .....	14
Second Generation HIV Surveillance Results .....	18
Discussion .....	25
Implications for Targeting and Improving HIV/STI Interventions in PICTs .....	27
Recommendations for Ongoing HIV/AIDS and STI Surveillance .....	28
2. FIJI .....	30
Introduction .....	30
Survey Personnel .....	30
Funding Arrangements .....	31
Ethics Approval .....	31
Objectives .....	31
The Strategic Plan for Response to STI, HIV and AIDS .....	32
HIV/AIDS and STI Case Reports .....	32
Second Generation HIV Surveillance Surveys .....	34
A. STI Prevalence Survey (SPS) Among Pregnant Women .....	34
B. HIV Surveillance Survey Among Male STI Patients .....	39
C. Behavioural Surveillance Survey Among Military and Police .....	41
Summary .....	44
3. KIRIBATI .....	46
Introduction .....	46
Survey Personnel .....	47
Funding Arrangements .....	48
Ethics Approval .....	48
Objectives .....	48
The Strategic Plan for Response to STI, HIV and AIDS .....	49
HIV/AIDS and STI Case Reports .....	49
Second Generation HIV Surveillance Surveys .....	51
A. STI Prevalence Survey Among Pregnant Women .....	51
B. Combined HIV Surveillance Survey and Behavioural Surveillance Survey Among Seafarers .....	56
Summary .....	62
4. SAMOA .....	63
Survey Personnel .....	64
Funding Arrangements .....	65
Ethics Approval .....	65
Objectives .....	65
The Strategic Plan for Response to STI, HIV and AIDS .....	65
HIV/AIDS and STI Case Reports .....	66
Second Generation HIV Surveillance Surveys .....	68
A. STI Prevalence Survey Among Pregnant Women .....	68
B. HIV Surveillance Survey Among STI Clinic Attendees .....	73
C. Behavioural Surveillance Survey Among Youth .....	75
Summary .....	77

Acknowledgements .....	79
5. SOLOMON ISLANDS .....	79
Introduction .....	79
Survey Personnel.....	80
Funding Arrangements.....	81
Ethics Approval .....	81
Objectives .....	81
The Strategic Plan for Response to STI, HIV and AIDS .....	82
HIV/AIDS and STI Case Reports .....	82
Second Generation HIV Surveillance Surveys .....	84
A. STI Prevalence Survey Among Pregnant Women .....	84
B. HIV Surveillance Survey Among Pregnant Women From Border Areas .....	88
C. Behavioural Surveillance Survey Among Youth.....	90
Summary.....	93
6. TONGA.....	94
Introduction .....	94
Survey Personnel.....	95
Funding Arrangements.....	96
Ethics Approval .....	96
Objectives .....	96
The Strategic Plan for Response to STI, HIV and AIDS .....	97
HIV/AIDS and STI Case Reports .....	97
Second Generation HIV Surveillance Surveys .....	99
A. STI Prevalence Survey Among Pregnant Women .....	99
Summary.....	104
Acknowledgements .....	105
7. VANUATU .....	106
Survey Personnel.....	107
Funding .....	107
Ethics Approval .....	107
Objectives .....	107
The Strategic Plan for Response to STI, HIV and AIDS .....	108
HIV/AIDS and STI Case Reports .....	108
Second Generation HIV Surveillance Surveys .....	110
A. STI Prevalence Survey Among Pregnant Women .....	110
B. HIV Surveillance Survey Among STI Patients.....	116
C. Behavioural Surveillance Survey Among Youth.....	118
Summary.....	121
Acknowledgements.....	122
References.....	122

## List of Tables

Table 1.1: Measurement of Millennium Development Goal 6: Combat HIV/AIDS, malaria and other diseases using SGS data .....	11
Table 1.2: Measurement of UNGASS indicators as related to a concentrated/low-prevalence Epidemic using SGS data.....	12
Table 1.3: Measurement of FHI indicators: Knowledge, Attitudes and Behaviours .....	13
Table 1.4: Cumulative Reported HIV, AIDS and AIDS-related deaths, Pacific Islands, December 2004 .....	14
Table 1.5: Population and sample size for the HSS, SPS and BSS by PICTs .....	16
Table 1.6: Summary of Millennium Development Goal indicators (Combat HIV/AIDS, malaria and other diseases) and UNGASS indicators for a concentrated/low-prevalence Epidemic in the Pacific Region .....	18
Table 1.7: Demographic Characteristics, Sexual Behaviour, HIV knowledge and STI prevalence of pregnant women in PICTs .....	21
Table 1.8: Selected sexual behaviours FHI indicators of youth in Samoa, Solomon Islands and Vanuatu 2005 .....	24
Table 1.9: HIV knowledge, belief and stigma among youths in Samoa, Solomon Islands and Vanuatu 2005 FHI indicators .....	25
Table 2.1: Distribution of cumulative reported HIV cases by sex and mode of transmission in Fiji, end of 2004 .....	33
Table 2.2: Reported number of STI cases in Fiji, 1998-2004.....	34
Table 2.3: Selected indicators of STIs and sexual behaviour among pregnant women in Fiji, 2004 .....	35
Table 2.4: Demographic characteristics of pregnant women in Fiji.....	37
Table 2.5: Behavioural characteristics of pregnant women by age in Fiji .....	38
Table 2.6: Prevalence of HIV and other STIs among pregnant women Fiji .....	38
Table 2.7: Prevalence of chlamydia by selected demographic and risk factors among pregnant women, Fiji .....	39
Table 2.8: Selected indicators of HIV and sexual behaviour among male STI clinic attendees in Fiji, 2004 .....	40
Table 2.9: Selected behavioural indicators for Police and Military personnel, Fiji .....	42
Table 2.10: Demographic characteristics of male police/military Fiji, 2004.....	43
Table 3.1: Distribution of cumulative reported HIV cases by sex and mode of transmission in Kiribati, 2004 .....	50
Table 3.2: Selected indicators of STIs and sexual behaviour among pregnant women in Kiribati.....	52
Table 3.3: Demographic characteristics of pregnant women in Kiribati .....	53
Table 3.4: Behavioural characteristics of pregnant women by age in Kiribati.....	54
Table 3.5: Prevalence of HIV and other STIs among pregnant women Kiribati.....	55
Table 3.6: Prevalence of STI by selected demographic and risk factors among pregnant women, Kiribati.....	56
Table 3.7: Selected indicators of HIV and sexual behaviour among seafarers in Kiribati, 2005.....	57
Table 3.8: Demographic characteristics of seafarers Kiribati 2005.....	59
Table 3.9: Sexual behaviours of seafarers by age group Kiribati 2005.....	61

Table 4.1:	Distribution of cumulative reported HIV cases by sex and mode of transmission in Samoa, end of 2004.....	67
Table 4.2:	Reported number of STI cases in Samoa, 1999-2004 .....	67
Table 4.3:	Selected indicators of STIs and sexual behaviour among pregnant women, Samoa 2004-2005.....	69
Table 4.4:	Demographic characteristics of pregnant women in Samoa .....	70
Table 4.5:	Behavioural characteristics of pregnant women by age in Samoa .....	71
Table 4.6:	Prevalence of HIV and other STIs among pregnant women, Samoa.....	72
Table 4.7:	Prevalence of chlamydia by selected demographic and risk factors among pregnant women, Samoa.....	72
Table 4.8:	Selected indicators of HIV and sexual behaviour among STI clinic patients in Samoa .....	73
Table 4.9:	Selected behavioural indicators in youth in Samoa .....	75
Table 4.10:	Demographic characteristics of youth, Samoa.....	76
Table 5.1:	Distribution of cumulative reported HIV cases by sex and mode of transmission in Solomon Islands, 2004.....	83
Table 5.2:	Selected indicators of STIs and sexual behaviour among pregnant women in Solomon Islands, 2005.....	85
Table 5.3:	Demographic characteristics of pregnant women in Solomon Islands.....	86
Table 5.4:	Behavioural characteristics of pregnant women by age in Solomon Islands.....	87
Table 5.5:	Prevalence of HIV and other STIs among pregnant women .....	87
Table 5.6:	Prevalence of chlamydia by selected demographic and risk factors among pregnant women, Solomon Islands.....	88
Table 5.7:	Selected indicators of HIV and sexual behaviour among pregnant women in Solomon Islands, 2005.....	89
Table 5.8:	Selected behavioural indicators for youth, Solomon Islands .....	91
Table 5.9:	Demographic characteristics of youth, Solomon Islands .....	92
Table 6.1a:	Distribution of cumulative reported HIV cases by sex and mode of transmission in Tonga, end of 2004 .....	98
Table 6.1b:	Reported number of STI cases in Tonga, 2000-2004.....	99
Table 6.2:	Selected indicators of STIs and sexual behaviour among pregnant women, Tonga 2005.....	100
Table 6.3:	Demographic characteristics of pregnant women in Tonga .....	102
Table 6.4:	Behavioural characteristics of pregnant women by age in Tonga .....	103
Table 6.5:	Prevalence of HIV and other STIs among pregnant women, Tonga .....	103
Table 6.6:	Prevalence of chlamydia by selected demographic and risk factors among pregnant women, Tonga .....	104
Table 7.1:	Distribution of cumulative reported HIV cases by sex and mode of transmission in Vanuatu, end of 2004 .....	109
Table 7.2:	Selected indicators of STIs and sexual behaviour among pregnant women in Vanuatu .....	111
Table 7.3:	Demographic characteristics of pregnant women in Vanuatu, 2005 .....	113
Table 7.4:	Behavioural characteristics of pregnant women by age in Vanuatu.....	114
Table 7.5:	Prevalence of HIV and other STIs among pregnant women, Vanuatu.....	115
Table 7.6:	Prevalence of chlamydia by selected demographic and risk factors among pregnant women, Vanuatu.....	116
Table 7.7:	Selected indicators of HIV and sexual behaviour among STI clinic attendees in Vanuatu, 2005.....	117



Table 7.8: Selected behavioural indicators for unmarried youth, Vanuatu 2005.....	119
Table 7.9: Demographic characteristics of youth, Vanuatu 2005.....	120

## Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Clinic
BSS	Behavioural Surveillance Survey
C.trachomatis	Chlamydia trachomatis
CBO	Community-based organization
CEO	Chief Executive Officer
CCM	Country Coordinated Mechanism
FHI	Family Health International
FTA-AB	Fluorescent treponemal antigen antibody
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GDP	Gross Domestic Product
HEAPS	Health education and promotional services
HIV	Human Immunodeficiency Virus
HRC	Health Research Council
HSS	HIV Surveillance Survey
KIOSU	Kiribati Islands Overseas Seafarers Union
LDC	Least Developed Country
MDG	Millennium Development Goals
MOH	Ministry of Health
N.gonorrhoeae	Neisseria gonorrhoea
NACA	National Advisory Committee on AIDS
NACC	National AIDS Coordinating Committee
NGO	Non-Government organization
NRL	National Reference Laboratory
PCR	Polymerase Chain Reaction
PICTs	Pacific Island Countries and Territories
PLWHA	People living with HIV or AIDS
SGS	Second Generation HIV Surveillance
SP	South Pacific
SPC	Secretariat of the Pacific Community
SPS	STI Prevalence Surveillance
STD	Sexually transmitted disease
STI	Sexually transmitted infection
TAC	Technical Advisory Committee
TPPA	Treponema Pallidum Particle Agglutination test
TTM	Tupua Tamasese Meaole (TTM) Hospital, Samoa
UNGASS	United Nations General Assembly Special Session
UNICEF	United Nations Children's Fund
UNSW	The University of New South Wales
VCT	Voluntary Confidential Testing
VDRL	Venereal Diseases Research Laboratory test
VSO	Volunteer Service Organization
WHO	World Health Organization

# 1. Pacific Region

## Introduction

The HIV epidemic in most Pacific countries, excluding Papua New Guinea, has been classified by the World Health Organization (WHO) as a limited or low prevalence epidemic and notifications data and ad hoc surveys support this suggestion (1). However, few countries in the Pacific Region have established, high quality, surveillance systems which are able to provide accurate estimates of HIV prevalence. While most countries in the Pacific have begun to address this problem through the development of national strategic plans which specifically address HIV/AIDS, these plans are at various stages of development and many have only been partially implemented.

In 2003, a regional proposal to strengthen HIV surveillance and related laboratory capacity in six sentinel Pacific Island Countries and Territories (PICTs) - Fiji, Kiribati, Samoa, Solomon Islands, Tonga and Vanuatu - was funded by the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM). The implementation of Second Generation HIV Surveillance (SGS) will develop and enhance existing sexually transmitted infection (STI), HIV and behavioural surveillance systems (2) and provide epidemiological data on which to design and evaluate targeted interventions. The SGS project is part of a larger GFATM project which is targeting STI services and People Living With HIV or AIDS (PLWHA).

SGS is current best practice in HIV surveillance where the population groups surveyed are dependent on the epidemic state of the individual country. (3, 4) SGS combines the existing HIV/STI case reporting with HIV zero-surveillance among selected higher risk groups, STI prevalence surveys (SPS) among pregnant women and behavioural surveillance surveys among vulnerable populations. A key aim of the project was to strengthen HIV surveillance in the Pacific by building capacity to conduct repeat SGS surveys through the development and implementation of sustainable methodologies. The first round of surveys was conducted in 2004-2005 with a second wave to follow in 2006-2007.

This HIV surveillance project is a significant initiative for the South Pacific (SP) Region, which has been well supported by PICTs and key United Nations and regional non-government organizations. This report presents a synthesis and analysis of data generated by the SGS surveys from the first round of surveys, including prevalence of disease, demographic descriptors, risk behaviours and knowledge of HIV. Analyses are intended to determine which activities will strengthen surveillance systems for the second wave of surveys in 2006 and to identify factors that can be targeted in STI/HIV prevention strategies. Results are presented as a regional summary followed by country-specific chapters and will be most useful for national Ministries of Health, in-country stakeholders and other regional agencies.

While these results provide the most comprehensive estimates to date of HIV and STI seroprevalence and related risk factors in the Pacific, it is important to consider that surveys of this type are limited due to funding and methodological constraints, including the latter survey design and sample size. Therefore, some results are presented as pilot studies. This report presents an abbreviated analysis of design constraints with some suggested improvements for future rounds of surveys at the end of this chapter. A more comprehensive review of these methodological issues will be presented in a subsequent publication.

## Funding Arrangements

Principal funding of the project was through GFATM and was administered by the Secretariat of the Pacific Community (SPC). The SGS projects were supported by the Ministry of Health (MOH) in each sentinel country, which provided project infrastructure including personnel, laboratory capacity and a governance structure for the project. In addition, funding was provided by WHO Western Pacific Regional Office and the Office of the WHO Representative for the South Pacific to support the regional technical team from the University of New South Wales (UNSW), Australia. All regional and country partners in the project provided additional resources to ensure completion of the project. In the initial work programme, additional funding from the GFATM was identified for Tuvalu to undertake SGS surveillance. Delays in the implementation of surveys have prevented the inclusion of results from Tuvalu in this report.

## Indicators

The indicators used to measure the nature and level of risk behaviours of participants were derived from three documents: Monitoring the Declaration of Commitment on HIV/AIDS Guidelines on construction of core indicators, United Nations General Assembly Special Sessions on HIV/AIDS (UNGASS) (5); Millennium Development Goals (6), United Nations; and Behavioural Surveillance Surveys, Family Health International (FHI) (7).

The eight Millennium Development Goals (MDG) were agreed to by all the world's countries and leading development institutions and aim to meet the development needs of the world's poorest people. Goal six of the MDG is "to combat HIV/AIDS, Malaria and other diseases". Target seven of goal six was, "to have halted by 2015 and begun to reverse the spread of HIV/AIDS". Two of the three indicators specified for monitoring progress in attaining this goal (18-19) have been monitored using data from this report : HIV prevalence among pregnant women aged 15-24 and condom use rate of the contraceptive prevalence rate. Indicators could not always be drawn directly from the questionnaire, therefore proxy indicators were used in the analyses where possible (Table 1.1).

The UNGASS indicators are an additional tool which measure the effectiveness of the national response to HIV/AIDS. A separate set of indicators are suggested depending on the epidemic state of the country. For the Pacific, indicators for a concentrated/low prevalence epidemic are most appropriate and coverage of these indicators by SGS data is shown (Table 1.2). The indicators suggested for generalized epidemics generally involve measurement in young people and have been presented in this report if they were considered relevant.

The FHI indicators, which were developed in conjunction with The Joint United Nations Programme on HIV/AIDS (UNAIDS) and WHO, specifically measure behaviours which are relevant to the spread of HIV, and which national programme efforts are trying to change. Survey questionnaires in this report were developed from FHI instruments and comprised of a core set of standardized indicators which track changes in behaviour over time. Table 1.3 describes the indicators which measure knowledge, attitudes and behaviours. Since the questionnaires used in this project were designed according to Behavioural Surveillance Survey (BSS), most indicators on FHI were available from analyses. When interpreting results, it should be noted that self-reported sexual behaviour data may be limited due to under- or over-reporting of sexual activity.

The three instruments (MDG, UNGASS and FHI) all comprise of a knowledge and behaviour indicator which differ slightly. Table footnotes provide explanations on the construction of these indicators where necessary.

**Table 1.1: Measurement of Millennium Development Goal 6: Combat HIV/AIDS, malaria and other diseases using SGS data<sup>1</sup>**

Indicators for monitoring progress	Measurement tool	Coverage in SGS data
18. HIV prevalence among pregnant women aged 15-24	SPS (FHI)	All countries
19. Condom use rate of the contraceptive prevalence rate <sup>2</sup>		
19a. Condom use at last high-risk sex	BSS (FHI) <sup>3</sup>	Youth (Samoa, Solomon Islands, Vanuatu), Seafarers (Kiribati) and Police and Military (Fiji)
19b. Percentage of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS	BSS (FHI) <sup>4</sup>	Youth (Samoa, Solomon Islands, Vanuatu)
19c. Contraceptive prevalence rate <sup>5</sup>	Not measured	Not measured

<sup>1</sup> The HIV/AIDS target seven for goal six is to "have halted by 2015 and begun to reverse the spread of HIV/AIDS".

<sup>2</sup> Among contraceptive methods, only condoms are effective in preventing HIV transmission. The contraceptive prevalence rate is also useful in tracking progress in other health, gender and poverty goals. Because the condom rate is only measured among women in union, it will be supplemented by an indicator on condom use in high risk situations. These indicators will be augmented with an indicator of knowledge and misconceptions regarding HIV/AIDS in 15-24 year-olds (UNICEF and WHO).

<sup>3</sup> Participants were asked for condom use at last sex with non-commercial partner and commercial partner separately. Therefore, in this report the indicator is reported separately for non-commercial and commercial partners.

<sup>4</sup> Data on HIV transmission through sharing a meal was not collected. In this report this indicator is constructed using knowledge of: condom protection, faithful partner, mosquito bite and healthy looking person with HIV.

<sup>5</sup> This indicator measures contraceptive prevalence in currently married women aged 15-49. This population group was not included in the SGS project.

**Table 1.2: Measurement of UNGASS indicators as related to a concentrated/low-prevalence Epidemic using SGS data**

Indicators	Measurement tool	Coverage of SGS data
<b>Expenditures</b>		
1. Amount of national funds disbursed by governments in low- and middle-income countries	Not measured	Not measured
<b>Policy Development and Implementation Status</b>		
2. National Composite Policy Index Areas covered: prevention, care and support, human rights, civil society involvement, and monitoring and evaluation Target groups: most at-risk populations	Not measured	Not measured
3. Percentage (most-at-risk population) who received HIV testing in the last 12 months and who know the result	BSS (FHI) <sup>1</sup>	Youth (Samoa, Solomon Islands & Vanuatu), Seafarers (Kiribati) and Police and Military (Fiji)
4. Percentage (most-at-risk populations) reached by prevention programmes	Not measured	Not measured
<b>Knowledge and Behaviour</b>		
5. Percentage of most-at-risk populations who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission	BSS (FHI) <sup>2</sup>	Youth (Samoa, Solomon Islands & Vanuatu), Seafarers (Kiribati) and Police and Military (Fiji)
6. Percentage of female and male sex workers reporting the use of a condom with their most recent client	Not measured	Not measured <sup>3</sup>
7. Percentage of men reporting the use of a condom the last time they had anal sex with a male partner	Not measured	Not measured <sup>4</sup>
8. Percentage of injecting drug users who have adopted behaviours that reduce transmission of HIV	Not measured	Not measured <sup>5</sup>
<b>Impact</b>		
9. Percentage of most-at-risk populations who are HIV infected	HSS (FHI)	STI clinic attendees (Fiji, Samoa and Vanuatu), Seafarers (Kiribati) and Pregnant women at border areas (Solomon Islands)

1 Data in this report collected on 'ever' tested for HIV and knew the result.

2 Data in this report not collected on transmission through sharing a meal for Youth, Police and Military. Indicator constructed using the following collected questions: condom protection; faithful partner; mosquito bite; healthy looking person with HIV. For Seafarers (Kiribati) no data collected on healthy looking person having HIV. Indicator constructed using condom protection, faithful partner, mosquito bite and sharing a meal.

3 No population of commercial sex workers was selected by countries for inclusion in the SGS. This information was collected in the surveys but the sample size of CSW's was too small and is therefore not reported.

4 No population of men having sex with men was selected by countries for inclusion in the SGS. In the BSS this information was collected but the sample size of men having sex with men was too small and is therefore not reported.

5 No population of injecting drug users was selected by countries for inclusion in the SGS.

**Table 1.3: Measurement of FHI indicators: Knowledge, Attitudes and Behaviours**

Indicator	Measurement tool	Definition
Proportion reporting correct knowledge of HIV/AIDS prevention methods	BSS	Number of respondents who can identify consistent condom use, mutual monogamy between partners and abstaining from sex as methods to reduce risk of HIV transmission
Proportion reporting no incorrect beliefs about HIV/AIDS transmission	BSS	Number of respondents who correctly reject common misconceptions about HIV transmission or prevention and who know that a healthy looking person can transmit AIDS
Proportion reporting accepting attitudes towards those living with HIV	BSS	Number of respondents who would be willing to share a meal with a person with HIV/AIDS <u>and</u> be willing to buy food from a shopkeeper who had HIV <u>and</u> would not want it to remain secret if a family member had HIV infection

## Objectives

For the first round of SGS surveys, the objectives were as follows

1. To strengthen HIV surveillance capacity in PICTs in conducting HIV/STI and behavioural surveys.
2. To provide baseline data on the HIV epidemic for future monitoring of HIV trends in selected population sub-groups.
3. To analyse demographic and behavioural factors in these groups.
4. To identify STI prevalence in asymptomatic pregnant women.
5. To provide information on the effectiveness of HIV prevention and control programmes.

Infections to be detected in the surveys included:

- human immunodeficiency virus (HIV)
- *Neisseria gonorrhoeae* (gonorrhoea)
- *Chlamydia trachomatis* (chlamydiosis)
- Syphilis: as reflected by prevalence of treponemal seropositivity.

## HIV/AIDS and STI Case-Reports

The epidemiology of HIV in PICTs consists mainly of imported infections and then limited heterosexual transmission to sexual partners of HIV-infected persons. At the end of 2004, a total of 11 212 HIV cases had been reported in this region (Table 1.4). Papua New Guinea continues to account for the majority (91%) of cases, although notifications are increasing in smaller countries such as Fiji and Kiribati. Table 1.4 shows the cumulative reported HIV, AIDS and AIDS-related deaths for the six sentinel PICTs participating in the GFTAM funded project. The cumulative HIV incidence rate per 100 000 ranged from 0.9 in Vanuatu to 49.4 in Kiribati. A high

ratio of reported AIDS cases relative to HIV infections (1:3.5) is apparent and is suggestive of a larger reservoir of infections.

Despite the Ministry of Health in each country maintaining a register of reported HIV/AIDS cases, under-reporting of cases is evident and is due to several possible factors including: limited available testing and surveillance facilities; poor accessibility of at-risk populations to testing sites; poor perception of risk among the general population; poor uptake of testing until presentation with AIDS-related illness; and limited professional and institutional capacity in AIDS diagnosis (1). HIV/STI testing is available throughout the region mainly in the larger urban centres with the population groups and specific STIs routinely screened for varying by country.

The diagnosis of an STI is a sensitive marker for behaviours that put populations at higher risk for HIV infection. The epidemiology of STIs is poorly characterized in most PICTs where there is little systematic surveillance. Reporting in the South Pacific Region is limited by lack of laboratory and public-health information capacity, most notably illustrated by the lack of chlamydia testing capacity.

**Table 1.4: Cumulative Reported HIV, AIDS and AIDS-related deaths.  
Pacific Islands. December 2004**

Country	Cumulative HIV cases	Cumulative AIDS cases (deaths)	HIV Cumulative incidence rate per 100 000
Fiji	182	25 (17)	21.8
Kiribati	46	28 (23)	49.4
Samoa	12	8 (8)	6.6
Solomon Islands	5	2 (2)	1.1
Tonga <sup>1</sup>	13	9 (8)	13.2
Vanuatu	2	2 (0)	0.9
All PICTs (excl. PNG)	1028	394 (257)	35.2
All PICTs	11 212	2237 (610)	130.1

Source: AIDS Section, Public Health Programme, Secretariat of the Pacific Community ([www.spc.int/aids](http://www.spc.int/aids)) 12th September 2005).  
1. 14 cases reported as of August 2005

## Second Generation HIV Surveillance Survey Methodology

The project involved the following steps:

1. Submission of a proposal which includes SGS surveys of HIV/STI and related behavioural risk factors to the GFTAM.
2. Identification of regional and technical partners to develop protocols, regional technical plan, project instruments and reporting frameworks. Limited mapping to identify population groups was undertaken. In addition, partners conducted regional workshops and co-ordinated project implementation.
3. Identification of a country HIV project leader to co-ordinate local activities.

4. Development of specific country project plans and customization of survey methods and instruments which were finalized at a Regional Workshop on HIV surveillance held in 2004. Training of survey managers/lead staff (two per country) in management of SGS implementation was undertaken at the regional workshop.
5. Implementation of surveys and data collection by a local survey team, including obtaining ethical approval and pilot testing of survey instruments. Site visits were undertaken by technical partners.
6. Critical review of SGS implementation and preliminary data validation, analysis and report writing at a Regional Workshop held in 2005.
7. Finalization of data analysis and report writing by the technical partner, drawing upon workshop materials and discussion.

Three types of cross-sectional surveys were undertaken and are described below. Protocols were developed for the surveys. (8, 9, 10) Table 1.5 shows population sub-group and sample size of each survey undertaken in each participating country.

## **Survey population and field procedures**

### **STI prevalence survey of pregnant women attending selected antenatal clinics.**

This survey determined by laboratory confirmation the prevalence of HIV and selected STIs (syphilis, gonorrhoea and chlamydia) among pregnant women attending their first visit to antenatal clinics. Potential participants were informed about the survey via information leaflets and/or group information sessions prior to obtaining consent to participate in the survey. In each country between 200-350 participants were consecutively recruited and asked to provide a blood sample and urine specimen and to complete a confidential questionnaire which was administered by trained interviewers. The core set of questions consisted of demographic and pregnancy characteristics, sexual history and behaviour and HIV knowledge and attitudes. The questionnaire was adapted for local use, translated into appropriate local languages and piloted before the surveys commenced. Data were collected between September 2004 and July 2005 and on average data collection lasted four months for each country.

### **HIV surveillance survey of groups considered to be high risk of HIV infection.**

This survey determined by laboratory confirmation the prevalence of HIV in groups considered to be at higher risk of HIV infection. Populations were selected based on mapping and consultation with countries taking into account risk status, accessibility and acceptability. Potential participants were informed about the survey prior to obtaining consent to participate. Considering the likely number of subjects for each target group which can be reached for blood testing, a small sample size of about 100 was set for the first round of surveys. In each country participants were consecutively recruited and asked to provide a blood sample and to complete a brief, confidential questionnaire which was administered by trained interviewers. The core set of questions consisted of demographic characteristics and sexual and risk behaviours. The questionnaire was adapted for local use and translated into appropriate local languages. Data were collected between September 2004 and July 2005 and on average data collection lasted three months for each country.

### **Behavioural Surveillance Survey**

This survey monitored the prevalence of risk behaviours related to HIV and/or STI infection in vulnerable population groups. The target groups for the BSS were: youth (unmarried/ not



cohabitating aged 15-24 years); seafarers or police/military. These populations were selected as priority groups on the basis of their potential as a reservoir to spread HIV infection in the Pacific.

Selection of sites for inclusion in the Behavioral Surveillance Surveys was determined according to local knowledge and in some instances mapping exercises. Data were collected between September 2004 and July 2005 and on average data collection lasted three months for each country. In each country between 250-600 participants were either consecutively recruited or followed a snowball method of recruitment dependent upon the methods used and population selected by the PICT. Participants were asked to complete a confidential questionnaire administered by trained interviewers which included demographic factors and standardized questions on behavioural risk factors and attitudes towards HIV/AIDS. The core set of questions consisted of the following; number and type of sexual partners, condom use, drug and alcohol use, symptoms of STIs, knowledge of HIV/AIDS prevention methods, beliefs about HIV/AIDS transmission and access to voluntary HIV testing and were largely sourced from Family Health International (FHI) (7). The questionnaire was adapted for local use and translated into appropriate local languages. Interviewers were trained and questionnaires were piloted before the surveys commenced.

Enrolment in the survey was voluntary and informed consent was obtained from all eligible participants prior to data and sample collection.

**Table 1.5: Population and sample size for the HSS, SPS and BSS by PICT**

	HSS		SPS		BSS	
	Population	Sample size	Population	Sample size	Population	Sample size
Fiji	STI clinic attendees	160	Pregnant women	303	Police and Military	257
*Kiribati	Seafarers	304	Pregnant women	202	Seafarers	304
Samoa	STI clinic attendees	101	Pregnant women	300	Youth	300
Solomon Islands	Pregnant women at border areas	100	Pregnant women	300	Youth	600
Tonga	-	-	Pregnant women	348	-	-
Vanuatu	STI clinic attendees	106	Pregnant women	292	Youth	328

\* Combined HSS/BSS survey

## Specimen collection and laboratory testing

The selection of the HIV testing approach, for example linked compared to unlinked, was dependent upon contextual factors such as country policy, laboratory capacity and infrastructure and existing testing practices.

A 10ml blood sample was collected from participants in the SPS and HSS and separated by centrifugation at 1 00-1 500 for 10 minutes. Sera were tested for HIV at local laboratories using Determine and Serodia HIV test kits. Where tests were reactive, they were retested in the National Research Laboratory, Australia using an ELISA test with confirmatory Western Blot.

Sera from participants in the SPS were also tested for syphilis infection using Determine Syphilis TP (Abbott Laboratories, Tokyo Japan, patent pending), an immunochromographic test for the qualitative detection of antibodies to *Treponema pallidum* antigens or other rapid survey approved test. For syphilis, all reactive sera were tested by Macro-Vue RPR Card Test, Beckton Dickinson (RPR) or a Venereal Diseases Research Laboratory Test (VDRL), VDRL-Cardiolipin Antigen, Dade Behring, Marburg, Germany, and a treponema-specific test, the *Treponema pallidum*

Particle Agglutination test (serodia-TP.PA, Fujirebio Inc, Tokyo, Japan) or the TPHA. Any specimen found reactive in the VRDL test was titred in serial dilution for later use in management of the patient. The Fluorescent Treponemal Antibody Absorption (FTA-Abs test (sorbent from Zeus Scientific, Raritan New Jersey, USA; IgG conjugate from Dako Corp, Glostrup, Denmark) or FTA-Abs IgG (slides-Trepo-Spot IF, Biomerieux) testing were used as confirmatory treponemal tests for any specimens found reactive in the Treponema Pallidum Particle Agglutination test (TPPA).

The syphilis test determines the prevalence of treponemal seroreactivity in the surveyed pregnant women (“lifetime exposure”). It is not a measure of the prevalence of syphilis (active infection). An unknown proportion of the women identified as treponemal sero-reactive will have received treatment previously. Accurate diagnosis of infectious syphilis and latent syphilis require the recording of serial RPR/VDRL titres and treatment details. A significant proportion of high level titres would support a high background prevalence of active infection.

In addition to providing a sera sample, participants in the SPS survey provided a 10-15ml first-catch urine sample. Urine samples were shipped frozen to the Molecular Microbiology Laboratory, at the Royal Women’s Hospital, Melbourne Australia where they were tested for chlamydia and gonorrhoea. Amplification of *C.trachomatis* and *N.gonorrhoeae* sequences were performed using ROCHE COBAS Amplicor (Roche Diagnostics, Branchburg, New Jersey, United States of America). All positive *N.gonorrhoeae* specimens were confirmed by an alternate Polymerase Chain Reaction (PCR) assay using primers and probes directed at a 90 base pair region of OPA gene as previously described (11).

## **Case management**

During the survey, participants received counselling on STI and HIV prevention and case management was provided as clinically indicated. Treatment protocols were compliant with WHO STI Syndromic Case Management Guidelines. These guidelines were modified by the Ministry of Health to suit local conditions and be sustainable post survey completion. Pregnant women, if symptomatic, were treated at the time of their routine antenatal examination according to the standard syndromic approach or at the follow-up visit when test results were available. Patients were informed verbally of the potential side effect(s) of medications to be used. All medications selected are routinely used to treat these infections.

## **Data preparation and analysis**

Data were entered using Microsoft Access on a dedicated password protected computer. Preliminary data checking was undertaken locally prior to electronic transfer to the AIHW National Perinatal Statistics Unit (NPSU) at UNSW as a password-protected file.

Further checking of the data was then undertaken at UNSW to examine inclusion criteria, distributions, range checks, consistency checks and summary measures. Data were checked and then analysed using SPSS (version 13 for Windows: SPSS Inc, Chicago, Illinois, USA), according to the plan of analysis (12). Descriptive analysis is presented with key results constructed as indicators (as described previously), for example age at first sex, number of sexual partners. Associations between key indicators and demographic data were assessed using chi-square tests.

# Second Generation HIV Surveillance Results

## Executive Summary: MDG and UNGASS Indicators

**Table 1.6: Summary of Millennium Development Goal indicators (Combat HIV/AIDS, malaria and other diseases) and UNGASS indicators for a concentrated/low-prevalence Epidemic in the Pacific Region**

Indicator	Fiji	Kiribati	Samoa	Solomon Islands	Tonga	Vanuatu
<b>MDG</b>	<b>%</b>					
18. HIV prevalence among 15-24 year old pregnant women	0*	0	0	0	0	0
19a. Condom use at last high-risk sex <sup>1</sup>						
- commercial	7.7	38.2	7.1	41.9	-	53.3
- non-commercial	12.5	32.7	14.0	45.1	-	37.3
19b. % of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS <sup>2</sup>	-	-	14.3	41.7	-	25.8
<b>UNGASS</b>	<b>%</b>					
3. % (most at risk population) <sup>3</sup> who received HIV testing 'ever' and who know the result <sup>4</sup>	28.4	66.2	1.7	3.2	-	3.1
5. % (most at risk population) <sup>3</sup> who both correctly identify ways of HIV and who reject major misconceptions about HIV transmission <sup>5</sup>	24.4	23.2	14.3	41.7	-	25.8
9. % of (most at risk populations) <sup>6</sup> who are HIV infected	0*	0	0	0	-	0

\* Ministry of Health, Fiji

1 Participants were police/military for Fiji, seafarers for Kiribati, youth for Samoa, Solomon Islands and Vanuatu. They were asked for condom use at last sex with non-commercial and commercial partners separately. Therefore this indicator is reported separately for non-commercial and commercial partners.

2 Data not collected on transmission through sharing a meal. Indicator constructed using the following collected questions: condom protection; faithful partner; mosquito bite; healthy looking person with HIV

3 Population most at risk were youth (Samoa, Solomon Islands and Vanuatu), seafarers (Kiribati) and police and military (Fiji).

4 UNGASS indicator was HIV testing and know the result in the last 12 months. Data collected for this survey was 'ever' tested.

5 For Fiji, Samoa, S.I's and Vanuatu data not collected on transmission through sharing a meal. Indicator constructed using the following collected questions: Condom protection; faithful partner; mosquito bite; and healthy looking person with HIV. For Kiribati, data not collected on healthy looking person having HIV. Indicator constructed using condom protection, faithful partner, mosquito bite and sharing a meal.

6 Population were STI Clinic attendees (Fiji, Samoa and Vanuatu), Seafarers (Kiribati) and pregnant women from border areas (Solomon Islands).

## **HIV surveillance survey of groups considered to be high risk of HIV infection.**

In total, 771 participants were recruited into the survey in five of the six sentinel countries; 367 were STI clinic patients of which 278 were male and 89 were female, and 100 were pregnant women from a border area of a PICT who were considered to be at higher risk of HIV infection. In addition, 304 seafarers were recruited into a combined HIV Surveillance Survey (HSS) /BSS survey. Five people invited to take part in the surveys declined to participate. Of the 771 participants recruited, 10 did not satisfy eligibility criteria for the surveys and were therefore excluded from analyses.

The age of STI patients ranged from 15-46 years, seafarers 21-54 years and pregnant women 15-42 years. Many participants (36.8%) were under 25 years of age. Few (12.9%) of the participants recruited from STI clinics were married and living with a spouse.

Of the 651 samples tested, none were confirmed to be HIV positive.

The methodological constraints of the HIV surveillance surveys and considerations needed before the next round of surveys are undertaken, including appropriate populations to sample and sample sizes, are currently being reviewed and will be written up as a peer review publication.

## **STI prevalence survey of pregnant women attending antenatal clinics**

### **Demographic characteristics**

A total of 1745 pregnant women were recruited at their first antenatal clinic visit in the six sentinel countries. Five women invited to take part in the surveys declined to participate. Based on the inclusion criteria, 67 women were excluded from the final analysis due to non-statement of age or being aged less than 15 years or greater than 44 years, leaving a final regional survey population of 1678 pregnant women.

Participants' ages ranged from 15-44 years (mean 26.6 years, standard deviation 5.9 years), with 42.6% aged < 25 years (Table 1.7). More than half the women were married and this ranged from 30.3% in the Solomon Islands to 97.5% in Kiribati. The median age at first marriage was 21 years (range 11-40 years). More than a quarter (483 or 28.8%) of participants were primiparous.

### **Sexual behaviours**

Table 1.7 details selected sexual and behavioural characteristics of the pregnant women. The median age at first sex was 19 years (range 11-35 years) and was consistent across countries. The median number of lifetime male sexual partners was one with a range from 1 to 80. Of these, 741 (44.1%) women reported a history of more than one sexual partners in their life, ranging from 20.6% in Kiribati to 67.7% in Vanuatu. Few women reported having had commercial sex in the last 12 months (22, 1.3%).

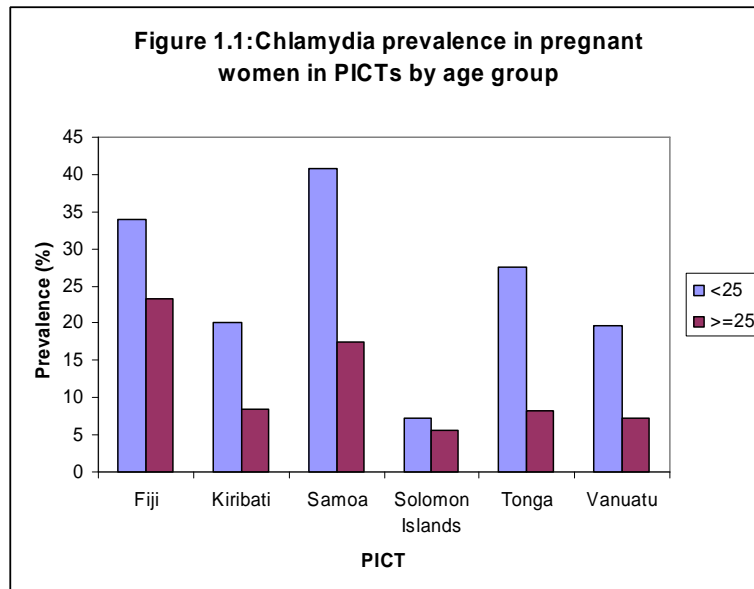
### **HIV Knowledge**

Two thirds of women (66.0%) knew that HIV can be transmitted from the pregnant woman to her unborn baby and through breast feeding. Women in Samoa had a particularly good HIV knowledge (90.6%) while knowledge in the Solomon Islands was poor (39.0%). In contrast, only 38.7% women regionally thought that a person could get confidential HIV testing in their community with the Solomon Islands reporting only 7.0% for this question.

## Prevalence of HIV and other sexually transmitted infections

Of the 1618 samples among pregnant women tested for HIV infection, none were found to be positive, giving an HIV seroprevalence of zero.

Of the 1618 women with viable urine specimens 291 (18.0%) were diagnosed regionally with chlamydia. This varied by PICT and ranged from 29.0% in Fiji to 6.4% in the Solomon Islands (Table 1.7). In all PICTs, younger women were more likely to be infected with chlamydia than older women, with chlamydia prevalence in women aged under 25 years ranging from 7.3% in the Solomon Islands to 40.7% in Samoa (Figure 1.1). Few women were found to be infected with gonorrhoea (1.7%). Among the 1619 women screened for syphilis, 49 (3.0%) reported treponemal seroreactivity following the Abbott Determine TP test.



**Table 1.7: Demographic Characteristics, Sexual Behaviour, HIV knowledge and STI prevalence of pregnant women in PICTs**

Characteristic	Fiji (n=303)	Kiribati (n=199)	Samoa (n=299)	S.Is (n=241)	Tonga (n=348)	Vanuatu (n=288)	Total (n=1678)
	%	%	%	%	%	%	%
<b>Demographics</b>							
% under 25 years	53.5	39.2	39.8	44.8	31.6	47.5	42.6
% Ever married	63.0	97.5	63.2	30.3	84.5	40.3	63.0
% Primiparous	37.6	30.7	34.4	27.4	19.3	25.0	28.8
<b>Sexual behaviour</b>							
Median age at first sex (range)	19 (12-30)	19 (12-32)	19 (12-34)	18 (11-28)	21 (14-35)	18 (12-25)	19 (11-35)
Number of sexual partners in life (%)							
1	47.9	72.9	50.8	37.8	76.1	30.9	52.9
≥ 2	50.8	20.6	45.2	56.8	22.7	67.7	44.1
Not stated	1.3	6.5	4.0	5.4	1.2	1.4	3.0
Sex for money/ gift in last year (%)							
Yes	-	0.5	2.7	0.4	1.7	2.1	1.3
No	99.7	99.0	96.6	97.9	97.1	97.6	97.9
Not stated	0.3	0.5	0.7	1.7	1.2	0.3	0.8
<b>HIV knowledge</b>							
No incorrect beliefs about MTCT <sup>1</sup> (%)							
Correct	70.6	69.8	90.6	39.0	70.7	49.7	66.0
Incorrect	29.4	30.2	9.4	61.0	29.3	50.3	34.0
Confidential HIV Testing in community (%)							
Yes	43.2	42.2	84.6	7.0	18.1	35.4	38.7
No	25.8	38.2	10.0	62.7	65.8	44.1	41.2
Not stated	31.0	19.6	5.4	30.3	16.1	20.5	20.1
<b>STI prevalence</b>							
Chlamydia (%)	29.0 (n=303)	13.0 (n=192)	26.8 (n=298)	6.4 (n=219)	14.5 (n=318)	13.2 (n=288)	18.0 (n=1618)
Gonorrhoea (%)	1.7 (n=303)	0 (n=192)	2.3 (n=298)	0.5 (n=219)	2.5 (n=318)	2.4 (n=288)	1.7 (n=1618)
Syphilis (%)	2.6 (n=303)	2.1 (n=188)	0 (n=299)	10.0 (n=241)	3.2 (n=348)	0.8 (n=240)	3.0 (n=1619)

<sup>1</sup> based on knowledge of whether a pregnant woman infected with HIV/AIDS can transmit the virus to her unborn baby and whether a woman with HIV/AIDS can transmit the virus to her newborn child through breastfeeding

## **Behavioural Surveillance Survey of youth.**

Interviews were conducted with a total of 1789 participants; 1228 youth, 257 police and military and 304 seafarers. Sixteen people who were invited to take part in the surveys declined to participate. Youth samples from three PICTs have been combined to provide a snapshot of in-school youth in the region, as they were the group which were comparable across countries. A full analysis for all groups are presented in country-specific chapters.

### **Demographic characteristics**

A total of 1228 youths were recruited from Samoa, Solomon Islands and Vanuatu into their respective BSS. Based on the inclusion criteria, 228 participants were excluded for not satisfying the age (15-24 years), education (not in school) or living arrangement (not married or cohabitating with a partner) criteria resulting in a final population of 1000 youths. Of those youths 528 (52.8%) were males and 472 (47.2%) females with participants' ages ranging from 15-24 years (mean 19.0 years, standard deviation 2.5 years) with 60% (599) aged less than 20 years.

### **Sexual behaviours**

Young people are a highly vulnerable population to HIV infection with the majority of new HIV infections occurring in this group. About two thirds of the youths reported ever having sex with 47.1% reporting sex in the last 12 months (Table 1.8). A higher proportion of males than females reported a history of sex (72.2% versus 57.9%). The median age at first sex was 16 years and ranged from 10 to 23 years. Among those who had ever had sex, respondents were asked about their commercial and non-commercial partners. Among all male youths, 8.9% have had sex with a commercial partner(s) in the last 12 months. Among all participants, 352 (35.2%) had sex with casual partners and 261 (26.1%) had more than one partner in last 12 months.

Among the 528 male participants, 40 (7.6%) reported ever having sex with a male partner. There were 27 men (5.1%) who reported having sex with a male in the last 12 months. More than 1 in 5 youths (19.7% for males and 25.2% for females) reported ever having sex for money or a gift.

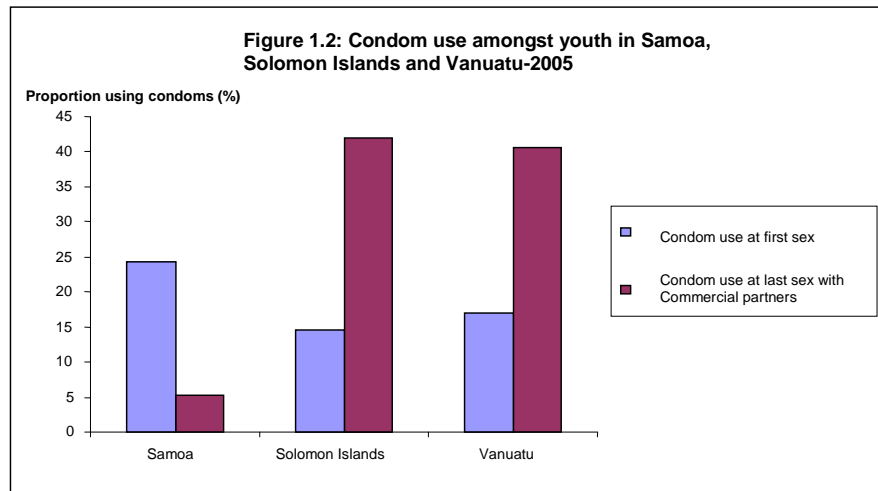
Overall, 11.4% of youths had sex before the age of 15 and this varied by country, 4.7% in Samoa, 16.6% in the Solomon Islands and 11.7% in Vanuatu.

Condom use among participants was low. One third (34.0%) of youths had used a condom at last sex with their commercial partners with less than 10% of youths reporting consistently using a condom with their commercial partner(s) in the last 12 months. A third (34.9%) of youths had used a condom at last sex with their casual partners with less than 11.7% of youths reporting consistently using a condom with casual partner(s) in the last 12 months. Condom use varied by PICT and ranged from 14.6% in the Solomon Islands to 24.3% in Samoa for condom use at first sex and from 5.3% in Samoa to 41.9% in the Solomon Islands for condom use at last sex with a commercial partner (Figure 1.2).

At a country level, a lower percentage of youth in Samoa have had sex, two or more partners or commercial sex than youth in Vanuatu or Solomon Islands. This likely reflects biases in the sampling of the youth population with Vanuatu and Solomon Islands drawing from urban street youth rather than those attending higher education institutions. In contrast, the male youth from Samoa were more likely to report having had sex with men, a well documented risk behaviour for HIV, than other respondents.

## HIV knowledge, belief and attitudes

More than half (53.8%) of the youths correctly answered HIV knowledge questions about condom protection, faithful partner and abstinence from sex (Table 1.9). This is in comparison to only 31.6% of police and military participants from Fiji who provided correct answers. A low proportion (37.4%) of youths had correct beliefs of HIV transmission, particularly in Samoa (20.0%), and only a quarter (25.4%) of youths from all countries had both correct HIV protection knowledge and belief of HIV transmission. About one third of youths demonstrated accepting attitudes towards people living with HIV such as sharing a meal and buying food from HIV positive persons. Nearly half (42.0%) of participants thought obtaining a confidential HIV test was possible in their community, although only a few (2.7%) had ever had an HIV test and knew the result.





**Table 1.8: Selected sexual behaviours (FHI indicators) of youth in Samoa, Solomon Islands and Vanuatu 2005**

	Samoa (n=300)	Solomon Islands (n=374)	Vanuatu (n=326)	Total (n=1000)
	%	%	%	%
Ever had sex in life (%)				
Yes	38.3	78.6	76.1	65.7
No	61.7	21.4	23.0	34.0
Not stated			0.9	0.3
Median age at first sex (yrs)	17 (12-21)	16 (11-25)	16 (10-22)	16 (10-25)
Condom use at first sex (%)				
Yes	24.3	14.6	16.9	17.2
No	75.7	83.7	83.1	82.0
Not stated		1.7		0.8
Number of partners in the last 12 Months (%)				
0	73.3	49.5	38.0	52.9
1	10.0	9.9	16.9	12.2
≥2	12.7	21.9	43.3	26.1
Not stated	4.0	18.7	1.8	8.8
Sex for money/gift in the last 12 Months (%)				
Yes	8.7	17.9	39.9	22.3
No	90.7	70.9	59.5	73.1
Not stated	0.6	11.2	0.6	4.6
Male youth having Sex with commercial partner in last 12 Months (%)				
Yes	8.2	9.5	8.9	8.9
No	91.2	90.5	88.7	90.2
Not stated	0.6	0	2.4	0.9
Condom use at last sex with commercial Partner (%)				
Yes	5.3	41.9	40.6	34.0
No	26.3	44.2	53.1	43.6
Not stated	68.4	13.9	6.3	22.1
Men Sex with Men in life (%)				
Yes	21.8	1.0	0.6	7.6
No	77.0	61.6	88.1	75.0
Not stated	1.2	37.4	11.3	17.4

**Table 1.9: HIV knowledge, belief and stigma among youths in Samoa, Solomon Islands and Vanuatu 2005 (FHI Indicators)**

	Samoa (n=300)	Solomon Islands (n=374)	Vanuatu (n=326)	Total (n=1000)
	%	%	%	%
Answer of correct knowledge of HIV/AIDS prevention methods <sup>1</sup>				
Correct	56.7	58.0	46.3	53.8
All other answers	43.3	42.0	53.7	46.2
Answer of no incorrect beliefs about HIV/AIDS transmission <sup>2</sup>				
Correct	20.0	55.6	32.5	37.4
All other answers	80.0	44.4	67.5	62.6
Answer of correct knowledge of HIV/AIDS prevention and no incorrect beliefs about HIV/AIDS transmission				
Correct	12.7	39.3	21.2	25.4
All other answers	87.3	60.7	78.8	74.6
Proportion reporting accepting attitudes towards those living with HIV <sup>3</sup>				
With accepting attitudes	21.7	28.3	47.2	32.5
All other answers	78.3	71.7	52.8	67.5
Confidential HIV test in the community				
Yes	30.0	47.6	46.6	42.0
No	58.0	31.8	25.8	37.7
Not stated	12.0	20.6	27.6	20.3
HIV tested and result known				
Yes	1.7	3.2	3.1	2.7
No	98.3	95.2	96.3	96.5
Not stated	-	1.6	0.6	0.8

1 Respondents who can correctly identify consistent condom use, mutual monogamy between partners and abstaining from sex as methods to reduce risk of HIV transmission

2 Respondents who know a person cannot get HIV from a mosquito bite and that a healthy looking person can be infected with HIV

3 Respondents who would be willing to share a meal with a person with HIV/AIDS and be willing to buy food from a shopkeeper who had HIV and would not want it to remain a secret if a family member had HIV infection.

## Discussion

The implementation of the first round of SGS surveys in the Pacific Island Countries and Territories (PICTs) has been successful. All six countries achieved remarkable results in implementation of surveys within the limited time frame, resources and country infrastructure demonstrating that SGS in PICTs is feasible. A standardized methodology was developed which can be built upon in future rounds of surveillance. Other PICTs not currently included within the GFATM funding may use the results as reference data and can benefit from the lessons learnt in setting up SGS in the sentinel countries.

The SGS surveys did not detect any HIV infections which is consistent with the level of case-reporting of HIV infections in the PICTs excluding Papua New Guinea. Although no cases of HIV were detected, this should not be interpreted as there being no HIV in the populations tested or that current HIV prevention programmes should not be strengthened. It may be that the sampling framework, method of recruitment and sample size were inadequate to detect cases. However,

the survey results do show that HIV is not present in high rates and if present, appears to be low prevalence at this time in the population sampled. Despite a low HIV prevalence detected in the surveys, there is evidence that countries in the PICTs are vulnerable to rapid HIV transmission if the virus were to enter these populations. High rates of chlamydia infection combined with low rates of consistent condom use indicate communities with a high potential for HIV transmission.

Nearly one in five pregnant women had chlamydia infection, a population group traditionally considered to be at lower risk of infection. Rates were highest in younger women aged less than 25 years. Chlamydia is an infection which has long been associated with pelvic inflammatory disease (PID), infertility and associated increase risk of HIV transmission. (13, 14) This has significant implications in communities in the PICTs where a high level of importance is placed on fertility. The higher prevalence of chlamydia observed among women (6.4%-29.0%) and the association with young age highlights the important role that screening and treatment has in the prevention of infertility. Implementation of control strategies for chlamydia in the PICTs remains challenging due to the unavailability of inexpensive, rapid and reliable diagnostic tests for detecting this infection, lack of single dose drug therapy for treating infections and limited use of condoms.

Despite condom use remaining one of the key methods to prevent HIV transmission, there was an extremely low level of condom use among all population groups surveyed suggesting that current condom promotion programs are of limited effect. This is a similar finding from previous surveys in the PICTs (15, 16, 17). In Port Vila, Vanuatu a large randomized knowledge, attitudes and practice survey found considerable resistance to condom use, and women were accused of promiscuity if they suggested condom use (18). It is clear that if condoms are to be used as the major strategy to control STI and HIV infection current programmes promoting the use of condoms including access, acceptability and cost, need to be evaluated and improved.

Knowledge of HIV prevention and transmission methods measure the extent to which AIDS programmes promoting mutual monogamy and condom use as primary ways of avoiding HIV infection have been successful. In all groups, a low knowledge of HIV prevention methods was observed indicating that to date education campaigns have had limited success. The proportion of respondents reporting accepting attitudes towards people living with HIV was also poor which is consistent with the current stage of the HIV epidemic.

The high rates of STIs, low condom use and low HIV knowledge suggests a vulnerable Region at risk for the introduction and spread of HIV infection. Therefore, further surveillance is critical. The next round of SGS surveys should concentrate on developing methodologies which are sustainable in the longer term. Appropriate levels of support will be required to ensure reliable and valid data are being collected. Local capacity for referral and follow up and laboratory testing should also be ensured. Further developments need to consider that countries in the Pacific have limited health budgets, poorly developed laboratory infrastructure and a small professional workforce often with limited corporate memory and restricted access to technology.

## **Implications for targeting and improving HIV/STI interventions in PICTs**

1. The Pacific Island Countries and Territories as a whole are currently at a low-level HIV epidemic state, according to UNAIDS/WHO classification (HIV prevalence < 1% in pregnant women, and <5% in a defined sub population). This status opens opportunities for early and effective prevention interventions.
2. Risky sexual practices such as casual and commercial sex were reported in all PICTs, albeit in varying patterns and degrees. This suggests that existing prevention programmes, principally condom promotion, need to be critically reviewed on an ongoing basis. Programmes should be culturally relevant and have the support of community leaders. Appropriate education strategies, including behaviour change programmes, for all persons who engage in risky sexual practices remains an important public health intervention. Public health programmes should fully implement the “100% condom programme” for all commercial and casual sex encounters. This programme is needed before HIV prevalence rises to detectable levels.
3. At this early stage in the epidemic, a productive activity is to focus on identifying and working with populations at higher risk of infection (as shown by behavioural data) and implementing prevention activities in collaboration with those target communities.
4. The capacity of PICTs to respond to the HIV situation is compromised by the lack of resources and the low level HIV epidemic state. The region remains highly vulnerable to an HIV epidemic because of high rates of chlamydia, multiple partner history and low use of condoms. For efficient and cost effective programmes, strategic planning of HIV activities should endeavour to utilize the experiences of existing successful HIV surveillance, prevention and management programmes with the aim of adapting them to local settings.
5. A high burden of chlamydia was observed among the population of pregnant women. This is a major public health problem which results in significant reproductive and neonatal morbidity. It is also a strong indicator of a community at great risk for the introduction and rapid spread of HIV infection. Policy and community-level interventions focused on STI prevention and control should therefore be a priority. This should include prenatal screening so that infection can be treated early in pregnancy.
6. Prevention efforts should target vulnerable groups such as youth. HIV/AIDS issues should be incorporated in national and regional policies aimed at young people. There needs to be an evaluation of current STI and HIV prevention strategies in health education and promotion for youth and this should focus on the appropriateness of STI strategies, accessibility and affordability of services, contraception and condoms.
7. Effective surveillance of HIV, including early case detection and identification of emerging higher risk populations, is a critical component in HIV prevention. Information from the surveillance system should be used to identify patterns of disease transmission and vulnerable populations in the emerging epidemic and to develop interventions and evaluate existing prevention programmes.
8. Development of voluntary confidential counselling and testing is essential. The majority of PICTs had not implemented Voluntary Confidential Testing (VCT), a key component of the post-implementation of SGS. Routine screening programmes for at-risk groups should be developed.

9. Implementation of policies and procedures to prevent maternal to child transmission of HIV (as agreed by UNAIDS) with all countries having the capacity to promote appropriate testing, counselling and management.
10. In small island settings, a comprehensive multi-sectoral response to the HIV epidemic should be supported, with sectors outside of health having an active role to maximize efficiencies and engagement. It will be important that public health prevention strategies are fully supported by national governments.

## **Recommendations for ongoing HIV/AIDS and STI surveillance**

The specific recommendations for HIV/AIDS and STI surveillance and for future rounds of SGS surveys are given below:

### **Recommendations for HIV/AIDS and STI Surveillance:**

1. Strengthening of routine HIV/AIDS and STI case reports and analysis of other information sources such as screening programme data and laboratory-based health information.
2. To undertake further rounds of SGS surveys to monitor trends in HIV/STI prevalence and behaviour over time.
3. Strategies to address chlamydia infection need to be developed at the regional level. There is a need for an inexpensive, reliable test for chlamydia and re-evaluation of the time frame for reduction in incident chlamydia cases in the global fund project.
4. Countries need to have in place a system for confirmatory testing of reactive treponemal specimens that are in line with national laboratory strategies, for example a RPR/VDRL followed by a TPPA where indicated.
5. Access for future survey and other health staff to Hepatitis B immunization and post exposure prophylaxis kits for exposure to HIV infection.
6. Routine participation and monitoring (where indicated) of countries in gonococcal antimicrobial surveillance programme (GASP) should be encouraged.

### **Recommendations for future SGS surveys:**

A summary of considerations for future rounds of SGS surveys are listed below. Some of these suggestions were discussed at the 2005 Regional Workshop with participants from sentinel countries.

1. Ensuring future rounds of surveys are sustainable and provide reliable results.
2. Future rounds of SGS may need a staggered implementation of surveys. It may not be sustainable for PICTs with limited infrastructure and funding to implement two to three surveys simultaneously. The second round of surveys should be implemented in 2006/2007 to minimize loss of institutional memory and maximize capacity building.
3. The survey design did not include a sampling framework that would allow statistical inference. All sites used a non-probability based sampling procedure (consecutive sampling), a simple

framework that allows timely recruitment. Future surveys should consider probability-based techniques such as “Respondent Driven Sampling” to permit generalization to the population and reduce sampling bias.

4. In countries with a limited HIV epidemic, sample sizes which reliably detect the estimated HIV prevalence are difficult to achieve. Formal sample size calculations should be undertaken prior to future survey implementation. Adequate samples of target groups to detect concentrated epidemics and to undertake more detailed statistical analyses which would identify associations between infection and risk should be ensured.
5. Initial country-specific formative research, such as risk group mapping, risk group size estimation and qualitative needs assessments of risk should be undertaken, to ensure selection of appropriate at-risk groups for future surveys. As surveillance capacity has developed, and the results of the first round of surveys are available, additional high risk populations such as sex workers and men having sex with men should be incorporated. In addition, some specific surveys on potential risk groups or risk behaviours could be considered, for example injecting drug use.
6. Questionnaire development involving extensive focus groups of target individuals to ensure survey instruments include all relevant behaviours and local terminology is incorporated.
7. Development of questionnaires which monitor MDG and UNGASS indicators
8. No information was collected on persons declining to participate in the surveys. To ensure each survey population is generalizable to the wider population they are taken to represent, demographic data such as age should be collected on decliners.
9. Self-reported risk behaviour is known to be biased and may under-estimate certain sexual practices. Validity of data can be measured by assessing consistencies in response to certain questions.
10. Development of a training package and promotion of a standard statistical software package to be used for the next round of surveys.
11. The majority of PICTs indicated concern about their capacity to conduct interviews. Further technical assistance is required to develop interviewing techniques for use in further SGS surveys. There is also a need for finding independent interviewers who are not connected with either the population or other special interest groups potentially biasing the data collection. Collection of data could also be strengthened by involvement of technical support teams such as EpiNet Pacific Public Health Surveillance Network and in-country public health and medical students.
12. Consideration of a combined HSS and BSS which would provide risk factor information related to infection status in target populations. Future surveys should be designed in order that associations between infections and demographic, sexual and behavioural characteristics can be identified.
13. Mainstreaming of HIV SGS surveys should be encouraged, including training of Ministry of Health staff and utilizing SGS survey instruments in clinical practice.

## 2. Fiji

### Introduction

Fiji consists of some 330 islands, of which about 100 are inhabited. The two largest islands, Viti Levu and Vanua Levu, contain most of the population and in 2004 the population in Fiji was approximately 850 000<sup>1</sup>. This is larger than most other Pacific Islands and countries. Overall, Fiji has a multi-ethnic composition, comprising Fijians 54%, Indians 39% and Other 7%. An estimated 20% of the population reside in the capital, Suva. The estimated annual population rate of growth is 0.8%, the fertility rate is 3.3 children per woman and crude birth rate is 20.9 per 1000 population. In 2004, life expectancy at birth was 65 years for males and 69 years for females.

Access to health care is universal. In 2004 there were 17 714 deliveries and almost all births (97%) were in hospitals. In 2004 there were a total of 26 hospitals, 76 health centres and 339 doctors. Fiji is classified by the United Nations as a least developed country and the estimated Gross Domestic Product constant per capita was FJD 3541 (US\$1868) in 2004<sup>2</sup>. The economy is based largely on agriculture, mining and tourism.

Sexually Transmitted Infections, including HIV, are emerging public health problems in Fiji. A recent rise in the number of HIV cases has been of concern within the country as well as the increasing number of patients accessing STI clinics. Among the factors influencing the population's vulnerability to HIV are early initiation of sex, cultural taboos related to sexuality, high rates of sexually transmitted infection, gender inequalities and a large young and transient population (19, 20). The official number of confirmed HIV cases in Fiji at the end of 2004 stands at 182, but the Fiji Ministry of Health estimates that this figure represents only about one-third of actual cases<sup>3</sup>. In 2003 GFATM funded six Pacific Island Countries and Territories to conduct a series of prevalence surveys among selected population groups. This chapter details the findings of the surveys carried out in Fiji 2004 to 2005.

### Survey Personnel

#### Local Team

Name	Affiliation	Role
Dr Timaima Tuiketeki	Ministry Of Health	Director Public Health
Dr Sophaganine Ty Ali	Ministry Of Health	Principal investigator
Mr Eseroma Rausuvanua	Ministry Of Health	Team Leader
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Mr Leone Tupua	Ministry Of Health	BSS Survey
Staff Nurse Sereima Lala	Ministry Of Health	HSS Survey
Mr Apaitia Seru	Ministry Of Health	Laboratory Officer

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1 [www.statsfiji.gov.fj](http://www.statsfiji.gov.fj). Accessed September 2005

2 [www.spc.int/prism/economic/nataccts.html](http://www.spc.int/prism/economic/nataccts.html). Accessed October 2005

3 <http://www.unaids.org/EN/Geographical+Area/by+country/fiji.asp>. Accessed September 2005

## Regional Team

Name	Affiliation	Role
Dr Susan Cliffe	University of New South Wales	Epidemiologist
Ms Jishan Dean	University of New South Wales	Computer Systems Analyst
Prof. Lisa Maher	University of New South Wales	Co-Investigator
Mr Bill Parr	Secretariat of the Pacific Community	GFATM Manager
Dr Sopheap Seng	Office of the WHO Representative for the South Pacific	HIV/AIDS/STI Focal Point
Mr Tim Sladden	Secretariat of the Pacific Community	HIV/AIDS & STI Surveillance Specialist
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Dr Nguyen Thi Thanh Thuy	World Health Organization, Western Pacific Regional Office	Technical Adviser on HIV/STI Epidemiology, Surveillance, Monitoring and Evaluation
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Dr Yueping Alex Wang	University New South Wales	Epidemiologist

## Funding Arrangements

The surveys were supported by the Ministry of Health Fiji, WHO Western Pacific Regional Office, Secretariat Pacific Community and University of New South Wales with principal funding through the Global Fund to Fight AIDS, Tuberculosis and Malaria.

## Ethics Approval

The surveys were approved by the National Health Research Committee and National Ethics Committee in Fiji and the Human Research Ethics Committee, University of New South Wales, Australia.

## Objectives

For the first round of SGS surveys, the objectives were as follows:

- strengthen HIV surveillance capacity in Fiji in conducting HIV/STI and behavioural surveys;
- provide baseline data on the HIV epidemic for future monitoring of HIV trends in selected population sub-groups;
- analyse demographic and behavioural factors in these groups;
- identify STI prevalence in asymptomatic pregnant women;
- provide information on the effectiveness of HIV prevention and control programmes.



Infections to be detected in the surveys included:

- Human immunodeficiency virus (HIV)
- *Neisseria gonorrhoeae* (gonorrhoea)
- *Chlamydia trachomatis* (chlamydiosis)
- Syphilis as reflected by prevalence of treponemal seropositivity.

## **The Strategic Plan for Response to STI, HIV and AIDS**

### **The Plan**

The multi-sectorial national HIV/AIDS and STI plan was coordinated by the National Advisory Committee on AIDS (NACA) with support from the government. In addition, the principal Indigenous political advocacy body, the Great Council of Chiefs, has made HIV and AIDS one of the two priority advocacy issues for the next five years.

The three-year national strategic plan (2004-2006) was endorsed in 2003 with an ongoing review for each component and a comprehensive review every 2-3 years. The plan covers prevention, care, treatment and surveillance of HIV/AIDS and STIs. Eight priority areas were identified, namely:

- Preventing people becoming infected with HIV and STIs
- Prevention of HIV in young people
- People living with HIV or AIDS
- Voluntary Confidential Testing
- Clinical management and treatment for HIV/AIDS
- HIV surveillance and research
- Human rights and HIV/AIDS
- Coordinating the multi-sectoral response.

### **The Country Coordinated Mechanism and Members**

The Country Coordinated Mechanism, a global fund requirement, is chaired by the Chief Executive Officer of Health who acts as a representative of a member of parliament.

## **HIV/AIDS and STI case reports**

### **Surveillance Structure**

- The case definition used for AIDS surveillance is based on WHO classification and reporting begun in 1989.

- HIV and AIDS cases are reported to the government on a monthly basis and stored at the Ministry of Health.
- Minimum data collected with reports include gender, age, ethnicity, divisional medical area and exposure information.
- Blood donors, police, military and migrants are routinely screened for HIV infection.
- Other notifiable STIs are gonorrhoea, syphilis, yaws, granuloma venerium, soft chancre, lymphogranuloma inguinale, ophthalmia neonatrum and venereal warts. The capacity for chlamydia testing is available, although chlamydia is not a notifiable infection.
- Antenatal clinic attendees are routinely screened for syphilis.

## Reported cases

A total of 182 HIV infections have been reported in Fiji as of the end of 2004 (Table 2.1). The number of new cases reported each year has increased for the last five years. In response to this the government has begun initiatives towards prevention of its spread and identification and treatment of those affected. The adult prevalence in 2004 was 9.8 per 100 000 population aged 15-49 years. The number of deaths due to AIDS is not routinely available or reliable as cause of death due to AIDS/HIV infection is often misclassified or not recorded on death certificates.

The first case reported in Fiji was in 1989 and was believed to be an imported case (infection contracted overseas). The mode of transmission was identified as blood products. Cumulative HIV reporting shows more males than females have been reported, however this trend was reversed for the first time in 2004. The main mode of transmission among both sexes since has been heterosexual transmission. The number of cases attributed to men having sex with men is low although is likely to be an under-estimate due to reluctance to report.

**Table 2.1: Distribution of cumulative reported HIV cases by sex and mode of transmission in Fiji, end of 2004**

	Fiji	6 PICTs in SGS project*	All PICTs
<b>Sex</b>			
Male	109	152	5749
Female	73	103	5043
Unknown	0	0	420
<b>Mode of transmission</b>			
Homo/bisexual	7	18	-
IDU	1	1	-
Heterosexual	158	202	-
Blood products	1	1	-
Mother to infant	13	21	-
Other/unknown	2	12	-

Source: Ministry of Health statistics

\* Excluding reports from the Solomon Islands as mode of transmission data unavailable

In Fiji, reported cases of syphilis and gonorrhoea have fluctuated between 1998 and 2004. In 2004 there were 852 reports of syphilis and 1182 reports of gonorrhoea (Table 2.2). Reporting on STIs is limited by the lack of laboratory and public-health information capacity.

**Table 2.2: Reported number of STI cases in Fiji, 1998-2004**

	1998	1999	2000	2001	2002	2003	2004
Syphilis	839	486	322	317	592	728	852
Gonorrhoea	1703	1763	1230	1147	1262	1150	1182
Other	n/a	338	698	624	587	472	332

## Second Generation HIV Surveillance Surveys

### Executive Summary: Fiji

Summary of Millennium Development Goal 6: Combat HIV/AIDS, malaria and other diseases and UNGASS indicators for a concentrated/low-prevalence Epidemic

Indicator	Population	Per cent
Millennium Development Goal 6: Combat HIV/AIDS, Malaria and other diseases <sup>1</sup>		
18. HIV Prevalence among 15-24 year old pregnant women	Pregnant Women (n=303)	0*
19a: Condom use at last high-risk sex <sup>2</sup>	Police & Military (n=225)	
- Commercial		7.7
- Non-commercial		12.5
19b. % of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS	-	-
UNGASS		
% of (most at risk populations) who <u>ever</u> received HIV testing in the who know the results <sup>3</sup>	Police & Military (n=225)	28.4
% of (most at risk populations) who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission <sup>4</sup>	Police & Military (n=225)	24.4
% of (most at risk populations) who are HIV infected	STI Clinic attendees (n=157)	0*

\* Ministry of Health, Fiji

1 The target relevant to this goal is "Have halted by 2015 and begun to reverse the spread of HIV/AIDS". This target comprises of a series of indicators, two of which are measurable for Fiji from the SGS surveys.

2 Participants were asked for condom use at last sex with non-commercial and commercial partners separately. Therefore, this indicator is reported separately for non-commercial and commercial partners

3 UNGASS indicator was HIV testing and know the result in the last 12 months. Data collected for this survey was 'ever' tested.

4 Data not collected on transmission through sharing a meal. Indicator constructed using the following collected questions: condom protection; faithful partner; mosquito bite; healthy looking person with HIV.

## A. STI Prevalence Survey among pregnant women

### Methodology

A sample of 303 pregnant women attending their first routine antenatal visit at the Antenatal clinic (ANC) of the Colonial War Memorial Hospital, Suva were consecutively recruited into the survey from October 2004 to December 2004. Participants completed a confidential questionnaire administered by trained interviewers to obtain demographic, behavioural and other information. Potential participants were informed about the survey via information leaflets and group information sessions prior to consent being obtained for participation in the survey.

Confidential linked testing for HIV and other selected STIs (syphilis, gonorrhoea, chlamydia) were undertaken. A 10ml blood sample and urine specimen was collected from participants. Urine samples were collected and transferred daily to Mataika Laboratory for storage. Frozen urine was shipped to the Molecular Microbiology Laboratory, Royal Women's Hospital, Melbourne for PCR testing to detect *C. trachomatis* and *N. gonorrhoeae*. The ROCHE COBAS Amplicor (Roche Diagnostics, Pleasanton, California, United States of America) PCR test was used. All specimens that were positive for *N. gonorrhoeae* were confirmed by an alternate PCR assay (Tabrizi et al (2005)). Sera were tested for HIV and syphilis at the Suva Colonial War Memorial Hospital. Samples were screened for HIV using the Serodia HIV test followed by the Abbott Determine HIV 1 / 2 test. Following the laboratory HIV testing algorithm, positive samples from the two consecutive tests were sent to the National Reference Laboratory (NRL), Australia for confirmation by Western Blot. Sera were tested for treponemal seroreactivity using the Venereal Diseases Research Laboratory test (VDRL) and confirmed for syphilis using TPPA test.

### Summary of Methods for SPS survey, Fiji

Survey design	Confidential Linked Testing
Sample size	303 (2 refusers)
Sampling method	Consecutive
Site locations	Antenatal clinic of the War Memorial Hospital, Suva
Type of consent	Verbal
Administration of questionnaire	Interviewer, with average time taken to complete an interview 15 minutes
Data collection period	October – December 2004
Laboratory tests	HIV: Serodia HIV test and Abbott Determine Rapid HIV 1/2 test. Reactives confirmed with Western Blot. Syphilis: VDRL and TPPA Gonorrhoea and Chlamydia: Urine PCR

### FHI Indicators

**Table 2.3: Selected indicators of STIs and sexual behaviour among 303 pregnant women in Fiji, 2004**

Key indicators	<25 years (n=162)	≥25 years (n=141)	Total (n=303)
HIV prevalence (%)			0
Syphilis prevalence (%)			2.6
Chlamydia prevalence (%)	34.0	23.4	29.0
Gonorrhoea prevalence (%)	3.1	0	1.7
Median age at first sex (years)			19 (12-30)
Commercial sex in last 12 months (%)			0
Median number of sex partners in life			2 (1-16)
No incorrect beliefs about mother to child transmission <sup>1</sup> (%)			70.6

<sup>1</sup> based on knowledge of whether a pregnant woman infected with HIV/AIDS can transmit the virus to her unborn baby and whether a woman with HIV/AIDS can transmit the virus to her newborn child through breastfeeding

## **Demographic characteristics**

Of the 305 pregnant women invited to participate in the survey, 303 were recruited. All participants met the inclusion criteria and were included in the final analysis.

Participants' ages ranged from 16-41 years (mean 25.1 years, standard deviation 5.2 years), with 53.5% (162) under 25 years of age (Table 2.4). More than half of women were married and currently living with their spouses and the median age at first marriage was 21 (range 13-35 years). The majority of women (75.3%) were housewives, while the father of the baby's occupation varied among company worker, police/military, business men, farmer, and government worker.

## **Pregnancy characteristics**

Among the 303 pregnant women, 114 (37.6%) were primiparous and the median gestation was 20 weeks (range 5-36 weeks). More than half of the women reported they were not trying to get pregnant. There were 51 women (16.8%) who reported using at least one contraceptive in the past year. The most popular contraceptive was birth control pills, followed by Depo-Provera or injectables, male condoms and withdrawal/pulling out.

**Table 2.4: Demographic characteristics of 303 pregnant women in Fiji**

Characteristic	Number	Percentage
Age group (years)		
15-19	40	13.2
20-24	122	40.3
25-29	86	28.4
30-34	34	11.2
35-39	19	6.3
40-44	2	0.6
Residence		
Capital city	152	50.2
Urban village	79	26.1
Rural village	24	7.9
Other	47	15.5
Not stated	1	0.3
Education		
Primary school	11	3.6
Secondary school	225	74.3
Higher (university/college)	67	22.1
Ever married		
Yes	191	63.0
No	112	37.0
Current living arrangement		
Married, living with spouse	186	61.4
Married, living with other sexual partner	1	0.3
Married, not living with spouse or other partner	1	0.3
Not married, living with sexual partner	72	23.8
Not married, not living with sexual partner	43	14.2
Occupation of baby's father		
Company worker	85	28.1
Police/Military	37	12.2
Business	35	11.6
Farmer	29	9.6
Government worker	26	8.6
Student	14	4.6
Seafarer/Fisherman	13	4.3
Unemployed	11	3.6
Transport worker	8	2.6
Other	45	14.8

## Risk behaviours

Table 2.5 details selected risk and sexual behavioural characteristics by age category. The median age at first sex was 19 years and ranged from 11 to 30 years.

The median number of lifetime sexual partners and sexual partners in the last 12 months was two (range 1-16) and one (range 1-2) respectively. There were 154 (50.8%) women reporting multiple sexual partners in their lifetime, although only 12 (4.0%) women had multiple partners in last 12 months.

None of the women reported having had commercial sex and few women reported having had concurrent partners in the last 12 months (11, 3.6%). A third of the women 34.0% (103) reported

ever having used a condom in their life. There were 11 women who reported being diagnosed with an STI in the last 12 months, in the majority of cases syphilis (8 cases), two gonorrhoea and one genital discharge.

**Table 2.5: Behavioural characteristics of 303 pregnant women by age in Fiji**

Outcome	<25		≥25		Total	
	No.	%	No.	%	No.	%
Median age at first sex	19		20		19	
Age at first sex						
<18	48	29.6	23	16.3	71	23.4
≥18	114	70.4	115	81.6	229	75.6
Not stated	0		3	2.1	3	1.0
Number of sexual partners in life						
1	95	58.7	50	35.5	145	47.9
≥2	65	40.1	89	63.1	154	50.8
Not stated	2	1.2	2	1.4	4	1.3
Number of sexual partners in last 12 months						
1	153	94.5	136	96.5	289	95.4
≥2	8	4.9	4	2.8	12	4.0
Not stated	1	0.6	1	0.7	2	0.6
Sex for money or gift in last 12 months						
Yes	0		0		0	0
No	161	99.4	141	100.0	302	99.7
Not stated	1	0.6	0		1	0.3
Concurrent partner in last 12 months						
Yes	8	4.9	3	2.1	11	3.6
No	154	95.1	138	97.9	292	96.4

The majority of women (70.6%) were aware that HIV can be transmitted from a mother to her unborn baby and through breast feeding. Only 43.2% of women thought a person could get confidential HIV testing in their community.

## Prevalence of HIV and other sexually transmitted infections

Table 2.6 details the prevalence of STI. Confirmation of some of the serology results is still outstanding.

Urine results were available for all pregnant women. Of these, 88 (29.0%) were diagnosed with chlamydia and five (1.7%) with gonorrhoea. There were three (1.0%) women with both chlamydia and gonorrhoea infection.

**Table 2.6: Prevalence of HIV and other STIs among pregnant women Fiji**

Sexually transmitted infection	Number tested	Number infected	Prevalence (%)	95% CI
Chlamydia	303	88	29.0	23.9-34.2
Gonorrhoea	303	5	1.7	0.2-3.1
Chlamydia/ Gonorrhoea	303	90	29.7	24.6-34.8
Syphilis	303	8	2.6	0.8-4.4
HIV	303	0	0	---

Table 2.7 details chlamydia infection by demographic characteristics and sexual behaviour. There was an association between chlamydia infection and age, marital status and number of sexual partners. Women who were younger were more likely to be infected than older women (34.0% versus 23.4%, chi square 13.5,  $p < 0.01$ ). Women who were married and women who had one sexual partner in their lifetime were less likely to be infected (20.9% versus 42.9% chi square 16.5  $p < 0.01$  and 20.7% versus 37.7% chi square 10.4  $p < 0.01$  respectively).

**Table 2.7: Prevalence of chlamydia by selected demographic and risk factors among 303 pregnant women, Fiji**

	Chlamydia		
	Total	No.	%
<b>Age</b>			
<25	162	55	34.0
≥25	141	33	23.4
<b>Marriage</b>			
Yes	191	40	20.9
No	112	48	42.9
<b>Education</b>			
Primary school	11	2	18.2
Secondary school	225	67	29.8
Higher (university/college)	67	19	28.4
<b>Current living area</b>			
Capital city	152	44	28.9
Urban village	79	25	31.6
Rural village	24	6	25.0
Other	47	13	27.7
<b>Age at first sex</b>			
<18	71	25	35.2
≥18	229	63	27.5
<b>Number of sexual partners in life</b>			
1	145	30	20.7
≥2	154	58	37.7
<b>Number of sexual partners in last 12 months</b>			
1	289	82	28.4
≥2	12	6	50.0
<b>Concurrent partner in last 12 months</b>			
Yes	11	6	54.5
No	292	82	28.1
<b>Ever used condom</b>			
Yes	103	25	24.3
No	200	63	31.5

## B. HIV Surveillance Survey among male STI Patients

### Methodology

A sample of 160 male STI patients attending the STI clinic in Suva were consecutively recruited into the survey from October to December 2004. Participants completed a confidential questionnaire administered by trained interviewers to obtain demographic, behavioural and other



information. All participants were provided with information in the form of leaflets or group information sessions prior to taking part in the survey.

Confidential linked testing for HIV, syphilis and Hepatitis B was undertaken. A 5ml blood sample was collected from participants and sera were sent to the Suva Colonial War Memorial Hospital for testing. Samples were screened for HIV using the Serodia HIV test followed by the Abbott Determine 1/2 test. Following the laboratory testing algorithm, positive samples from the two consecutive tests were sent to the NRL, Australia for confirmation by Western Blot. Sera were tested for treponemal seroreactivity with a VDRL followed by a TPPA test for confirmation of syphilis. For Hepatitis B detection, the Hepatitis B Surface Antigen (HbsAG) test was used.

## Summary of methods for HSS survey, Fiji

Population	Male STI clinic attendees
Survey design	Confidential Linked Testing
Sample size	160
Sampling method	Consecutive
Site locations	STI clinic , Suva
Type of consent	Verbal
Administration of questionnaire	Interviewer administered with an average time for completion of 10 minutes
Data collection period	October – December 2004
Laboratory tests	HIV: Serodia test and Abbott Determine rapid HIV 1/2 test Syphilis: VDRL and TPPA Hepatitis B: HbsAG

## FHI Indicators

**Table 2.8: Selected indicators of HIV and sexual behaviour among 157 male STI clinic attendees in Fiji, 2004**

Key indicators	N=157
HIV prevalence (%)	0*
Median age at first sex (years)	17 (6-25)
Proportion of men having sex with more than one partner in the last 12 months (%)	67.5%
Median number of sex partners in the last 12 months	3 (0-120)
Proportion of men reporting commercial sex in the last 12 months (%)	20.4%
Proportion of men reporting sex with men in the last 12 months (%)	6.4%
Proportion of men using condoms at last sex with female partner (%)	21.1%
Proportion of men using condoms at last MSM (%)	20.0%
Proportion of men using condoms with female partner consistently (%)	4.0%

\* Personal Communication (Ministry of Health, Fiji)

## Demographic characteristics

All eligible men agreed to participate in the survey. A total of 160 male participants were recruited from one STI clinic in Fiji. Three men who were aged over 49 years were excluded, leaving 157 men in the final analysis.

Participants' ages ranged from 16-46 years (mean age 25.1 years, standard deviation 6.0 years), with over half (59.2%) of the men aged 25 years and younger. The majority of men were from the

capital city (28.7%) or surrounding urban villages (54.8%). More than 90% of participants had attended secondary school or higher. Most (70%) men were not married and not living with a sexual partner. About a quarter of men reported being away from home for more than one month in the last year. Three quarters of men reported alcohol consumption in the last month, with a median of six drinks (range 1-30). Only three (1.9%) men reported injecting drug use in the last 12 months.

## **Sexual behaviour**

Table 2.8 details selected indicators of sexual risk behaviours among male STI clinic attendants. The majority of participants (98.1%) have had sexual intercourse. The median age at first sex was 17 years and ranged from 6 to 25 years. Among all participants, 120 (76.4%) had sex with regular female partner(s), 32 (20.4%) had sex with female commercial partner(s), and 78 (49.7%) had sex with casual female partners. The median number of female sexual partners for all participants was three (range 0-120). Among all participants, 106 (67.5%) had more than one partner in the previous 12 months.

A low proportion (21.1%) of condom use at last sex with a female partner was reported and only 4.0% of men reported using condoms with female partners consistently (i.e. every time), with 15.0% almost every time and 43.1% sometimes.

Few participants reported they had ever had sex with men in their lifetime (8.9%) or in the previous 12 months (6.4%). Among all participants, six men (3.8%) reported having sex with men for money or gifts.

Almost one third of participants reported having concurrent partners in the last 12 months. Over one third participants were diagnosed with a Sexually Transmitted Disease (STD) in the last 12 months, the most common reported STD was gonorrhoea, followed by syphilis and chlamydia.

## **Prevalence of HIV**

HIV results await confirmation.

## **Limitations of the Survey**

The HIV Sero-surveillance Survey was carried out as a pilot survey to establish a methodology for surveying groups at higher risk of HIV infection. While results present an interesting profile of male STI clinic attendees, only a limited number of participants were surveyed and results should be interpreted accordingly. In particular, caution should be used in interpretation of the HIV prevalence results. Consideration of the necessary sample sizes required to reliably detect HIV prevalence in low prevalence settings should be given to future surveys.

# **C: Behavioural Surveillance Survey among Military and Police**

## **Methodology**

All eligible men volunteered to participate in the survey. A behavioural prevalence survey of risk behaviours related to HIV and/or STI infection in 257 male military personnel and policemen was

conducted between September 2004 and January 2005. Participants were consecutively recruited and completed a confidential questionnaire administered by trained interviewers which included standardized questions on behavioural risk factors and attitudes towards HIV/AIDS. Participation in the survey was voluntary and informed consent was obtained from all eligible participants prior to data collection.

## Summary of methods for BSS survey, Fiji

Population	Police and military personnel
Sample size	257 (179 Military and 78 Police)
Sampling method	Consecutive
Site locations	Police Academy and Fiji Military Force's camp in Suva and Labasa
Type of consent	Verbal
Administration of questionnaire	Interviewer administered with an average time of completion 20 minutes
Data collection period	September 2004 – January 2005

## FHI Indicators

**Table 2.9: Selected behavioural indicators for Police (n=72) and Military personnel (n=153), Fiji**

Indicator	N=225
Median age at first sex (years)	18 (10-24)
Median number of female sex partners in the last 12 months	1 (0-33)
Proportion having sex with female casual partners in the last 12 months (%)	14.2
Median number of female casual partners in last 12 months	0 (0-18)
Proportion of adult males using condoms at last sex with female casual partner (%)	12.5
Consistent condom use of adult male with female casual partners in last 12 months. (%)	3.1
Proportion of adult males reporting having sex with female commercial partners in last 12 months (%)	5.8
Median number of female commercial partners in last 12 months	0 (0-3)
Proportion of adult males using condoms at last sex with female commercial partner (%)	7.7
Consistent condom use of adult males with female commercial partners in last 12 months (%)	0 (0/13)
Proportion of male adults reporting sex with men in the last 12 months (%)	1.3 (3/225)
Proportion of adult males reporting use of condoms at last anal sex with male partner (%)	33.3 (1/3)
Proportion who have ever received HIV testing and know the result (%)	28.4
Proportion reporting correct knowledge of HIV/AIDS prevention methods (%) <sup>1</sup>	31.6
Proportion reporting no incorrect beliefs about HIV/AIDS transmission (%) <sup>2</sup>	46.7
Proportion who both report correct knowledge of HIV/AIDS prevention and no incorrect beliefs about HIV/AIDS transmission (%)	19.1
Proportion reporting accepting attitudes towards those living with HIV (%) <sup>3</sup>	23.6

1 Respondents who can correctly identify consistent condom use, mutual monogamy between partners and abstaining from sex as methods to reduce risk of HIV transmission.

2 Respondents who know a person cannot get HIV from a mosquito bite and that a healthy looking person can be infected with HIV.

3 Respondents who would be willing to share a meal with a person with HIV/AIDS and be willing to buy food from a shopkeeper who had HIV and would not want it to remain a secret if a family member had HIV infection.

## Demographic characteristics

A total of 257 adult males were recruited from three survey sites in Fiji. Based on the inclusion criteria, participants where age was not stated and who were aged 50 years and older were excluded from final analyses. The final survey population comprised of 225 adult males, of whom 72 (32.0%) were policemen and 153 (68.0%) were military personnel.

Participants' ages ranged from 19-49 years (mean 36.2 years, standard deviation 7.9 years), with 66.7% (150) of men aged 34 years and older (Table 2.10). More than 72% of participants were from the capital city or urban villages. The majority of men (67.1%) attended secondary school and 28.4% had attended university or college. Less than half the men reported being away from home for more than one month in the last 12 months. Christianity was the predominant religion among the participants who were predominantly Fijian (80%). Three quarters of men were married and currently living with their spouses. The median age at first marriage was 26 with a range from 15 to 42 years. Only six men (3.2%) reported they had more than one wife.

**Table 2.10: Demographic characteristics of 225 male police and military Fiji 2004**

Characteristic	Number	Percentage
Age group (years)		
<25	27	12.0
25-29	30	13.3
30-34	18	8.0
35-39	58	25.8
40-44	62	27.6
45-49	30	13.3
Occupation		
Police men	72	32.0
Military	153	68.0
Current living in capital/urban/rural area		
Capital city	101	44.9
Urban village	63	28.0
Rural village	41	18.2
Other	17	7.6
Not stated	3	1.3
Education		
Primary school	6	2.7
Secondary school	151	67.1
Higher (university/college)	64	28.4
Not stated	4	1.8
Away from home for more than 30 days in last 12 months		
Yes	96	42.7
No	123	54.7
Not stated	6	2.7
Current living status		
Married, living with spouse	169	75.1
Married, living with other sexual partner	6	2.7
Married, not living with spouse or other partner	8	3.6
Not married, living with sexual partner	9	4.0
Not married, not living with sexual partner	25	11.1
Not stated	8	3.5

## Substance behaviours

About 40% of participants reported drinking alcohol at least once in the last 4 weeks. The median number of drinks per session was six (range 1-50). One third of men (36.4%) had used tobacco, and more than 70% had used at least one kind of drug apart from tobacco. The most popular drug was kava, followed by marijuana. Two (0.9%) participants reported injecting drugs in the last 12 months.

## Sexual behaviours

Table 2.9 shows sexual behaviour indicators among men in the survey. The majority (97.3%) of men have had sex in their life time with a median age at first sex of 18 years (range 10-24 years). Nearly all (92%) men had sex in the last 12 months with a median of one (range 0-33) female partner.

Of participants, only 13 (5.8) had sex with a commercial female partner(s) in the last 12 months; in the same period 32 (14.2) had sex with a casual female partner. The median number of commercial female partners and casual female partners for all participants was zero (range 0 to 3 and 0 to 18 respectively).

Among the participants, 15 (6.7%) reported ever having had sex with a male partner, of those three reported sex with a male in the last 12 months.

Only limited condom use was reported among participants at last sex with commercial and casual partners. Only one (7.7%) of 13 men reported using a condom at last sex with a commercial female partner. Among those men with casual partners in the last 12 months (32), four (12.5%) reported using a condom at last sex, with only one reporting consistent condom use.

There were 16 (7.1%) men who reported being diagnosed with either a discharge or genital ulcer in the last 12 months, of which two reported both a discharge and ulcer, 13 reported a discharge only and one an ulcer only.

## HIV Knowledge, belief and attitudes

A low level of knowledge of HIV protection methods was observed among men. Only 71 (31.6%) men had correct knowledge of HIV protection. A slightly higher proportion (46.7%) had the correct knowledge about HIV transmission. Only 19.1% of men had both correct HIV protection knowledge and HIV transmission knowledge. Approximately a quarter of participants (23.6%) had accepting attitudes to those with HIV infection. Over half (59.1%) of participants thought that a confidential HIV test was possible in their community. Less than one third of participants had an HIV test and knew the result.

## Summary

- Fiji is a country with a low prevalence of HIV infection, although case reports have increased over the last 5 years. HIV results among pregnant women and adult male STI clinic attendees participating in the prevalence surveys have not yet been included in the report.
- Chlamydia is endemic among pregnant women. Strategies to address this should be developed at the country level.
- Condom use is extremely low, despite condoms being an effective strategy in prevention of HIV and STI transmission.

- The population remains highly vulnerable to HIV infection with biologic, behavioural and sexual indicators of risk. For example, police and military participating in the behavioural surveillance survey reported a low level of condom use and a low level of knowledge of HIV/AIDS.
- The HIV sero-surveillance survey has helped to establish a methodology for surveying groups at high risk of HIV infection. Considerations for future surveys include identification of higher risk populations, sampling techniques and estimates of sample size which would be needed to reliably detect HIV prevalence in low prevalence settings.

# 3. Kiribati

## Introduction

The Republic of Kiribati is a Micronesian country comprising of some 33 atoll islands scattered in the Pacific Ocean which can make communication and delivery of health services difficult at times. Kiribati is typical of the Pacific Island nations in the Region with a small population. The population recorded during the 2000 census was 84 494, and projections based on this number estimate a population of 93 100 in 2004<sup>1</sup>. Approximately one third of the population resides in the capital, South Tarawa. The population is predominantly Micronesian, with very small Polynesian and non-Pacific minorities. Kiribati has an estimated population growth rate of 1.8%, fertility rate of 3.6 children per woman and crude birth rate of 33.4 per 1000 population. In 1995, life expectancy at birth was 58.5 years for males and 64.7 years for females<sup>2</sup>.

There is one main referral hospital, Tungaru Central Hospital (TCH) situated on South Tarawa, which primarily receives patients from the Gilbert Group but provides services for all of Kiribati. There are also two smaller hospitals. The Kiritimati Hospital is located on Kiritimati Island and is the referral hospital for the Line and Phoenix Islands. The Betio Hospital is located in Betio, South Tarawa. In the outer islands of the Republic of Kiribati, there are 97 health centres, dispensaries, and clinics with 100 nurses servicing the health centres, and two doctors posted on Kiritimati Island at Kiritimati Hospital<sup>3</sup>. On South Tarawa, there are 11 health centres (excluding Tungaru Central Hospital and Betio Hospital), 173 nurses, and 15 doctors.

Kiribati is classified by the United Nations as a Least Developed Country (LDC) and the estimated Gross Domestic Product constant per capita was 776 Australian dollars (US\$540) in 2002<sup>4</sup>. The country has very limited resources and the main sources of income are foreign aid, tuna fishing, exports of copra and seaweed and remittances from I-Kiribati seafarers working overseas.

The epidemiology of STIs is poorly characterized in Kiribati, as in many other developing PICTs. Apart from national reporting of AIDS and HIV infection, there is little surveillance of STIs in Kiribati and reporting is limited by lack of laboratory and public-health information capacity. In Kiribati, a population of interest in the strategy to decrease transmission of STI and HIV are seafarers, a highly mobile population who are away from their partners for long periods of time on a regular basis. In 2003 a cross-sectional STI prevalence survey was conducted among seafarers and pregnant women. While little HIV was diagnosed, a high prevalence of chlamydial infection was observed among seafarers coupled with a low use of condoms (21). The study identified the need to strengthen HIV and STI surveillance in Kiribati. In 2003 the GFATM funded six PICTs to conduct a series of prevalence surveys among selected population groups. This chapter details the findings of the surveys carried out in Kiribati during 2004 to 2005.

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1 Report on the 2000 Census of Population. Statistics office, Ministry of Finance, Republic of Kiribati, 2000

2 WHO Country Health Information Profile 1995

3 Health Information Centre, Ministry of Health, Republic of Kiribati 2004

4 [www.spc.int/prism/economic/nataccts.html](http://www.spc.int/prism/economic/nataccts.html). Accessed October 2005

# Survey Personnel

## Local Team

Name	Affiliation	Role
Dr Kabwea Tiban	Director of Public Health Services, TCH, Kiribati	Principal Investigator, Kiribati
Ms Mamao Robate	Tungaru Central Hospital, HIV Unit, Ministry of Health, Kiribati	HIV/AIDS and STI Coordinator-Study Coordinator (HIV Surveillance-ANC & Seafarers)
Ms Lauren Kandt	Tungaru Central Hospital, HIV Unit, Ministry of Health, Kiribati	HIV Project Officer, HIV Study Coordinator – ANC and Seafarers
Mr Tebuka Toatu	Tungaru Central Hospital, Ministry of Health, Kiribati	Director of Laboratory Services, Team Leader-Seafarers HIV Surveillance
Ms Rosemary Tekoaau	Tungaru Central Hospital, Ministry of Health, Kiribati	Laboratory Technologist, Team member-ANC HIV Surveillance
Mr Andrew Tekanene	Tungaru Central Hospital, Ministry of Health, Kiribati	Assistant Laboratory Technician, Team member-Seafarers
Mr Barieti Itaaken	Tungaru Central Hospital, Ministry of Health, Kiribati	Assistant Laboratory technician, Team member – Seafarers and ANC
Mr Bernard P Tatireta	Tungaru Central Hospital, Ministry of Health, Kiribati	Assistant Laboratory Technician, Team member-Seafarers and ANC
Ms Benina Tauman	Tungaru Central Hospital, Ministry of Health, Kiribati	Assistant Laboratory Technician, Team member-Seafarers and ANC
Mr Tekaibeti Tarataake	Tungaru Central Hospital, Ministry of Health, Kiribati	Laboratory Technician – Team member-Seafarers
Dr Takeieta B Kienene	Ministry of Health, Republic of Kiribati	Permanent Secretary for Health & Medical Services
Ms Tekaniuea Uriam	Marine Training Centre, Kiribati Kiribati Island	First Aid Instructor – Team member-seafarers
Mr Brown Nataua	Kiribati Island Overseas Seamen's Union (KIOSU)	Team Member-Seafarers
Ms Angibwebwe Toromon	Tungaru Central Hospital, ANC, Kiribati	Team Leader – ANC HIV Surveillance
Ms Tooreka Etuati	Tungaru central Hospital, Kiribati	Team member – ANC Surveillance
Ms Komera Otea	Foundation of the South Pacific, Kiribati	Team member – ANC Surveillance
Ms Kabunateiti Teabo	Ministry of Education, Youth and Sport, Kiribati	Team member – ANC Surveillance
Ms Tinai I Metai	Tungaru Central Hospital, Kiribati	Nutritionist, Team member – ANC Surveillance



## Regional team

Name	Affiliation	Role
Dr Elizabeth Sullivan	University New South Wales	Regional Project coordinator Principal Investigator, Australia
Dr Susan Cliffe	University New South Wales	Epidemiologist
Ms Jishan Dean	University New South Wales	Computer Systems Analyst
Professor Lisa Maher	University New South Wales	Co-Investigator
Mr Bill Parr	Secretariat of the Pacific Community	GFATM Manager
Dr Sopheap Seng	Office of the WHO Representative for the South Pacific	HIV/AIDS/STI Focal Point
Mr Tim Sladden	Secretariat of the Pacific Community	HIV/AIDS & STI Surveillance Specialist
Dr Nguyen Thi Thanh Thuy	World Health Organization, Western Pacific Regional Office	Technical Adviser on HIV/STI Epidemiology, Surveillance, Monitoring and Evaluation
Dr Sepehr Tabrizi	Royal Women's Hospital Melbourne	Senior Laboratory Scientist
Dr Yueping Alex Wang	University New South Wales	Epidemiologist

## Funding Arrangements

The surveys were supported by the Ministry of Health, Kiribati, WHO Western Pacific Regional Office Secretariat of the Pacific Community and the University of New South Wales, with principal funding through the Global Fund to Fight AIDS, Tuberculosis and Malaria.

## Ethics Approval

The surveys were approved Ministry of Health, Kiribati. There is no standing Human Research Ethics Committee. Therefore with the support of Ministry of Health, Kiribati ethical approval was gained through the Human Research Ethics Committee of the UNSW, Australia.

## Objectives

For the first round of SGS surveys, the objectives were as follows:

- strengthen HIV surveillance capacity in Kiribati in conducting HIV/STI and behavioural surveys;
- provide baseline data on the HIV epidemic for future monitoring of HIV trends in selected population sub-groups;
- analyse demographic and behavioural factors in these groups;
- identify STI prevalence in asymptomatic pregnant women;
- provide information on the effectiveness of HIV prevention and control programmes.

Infections to be detected in the surveys included:

- Human immunodeficiency virus (HIV);
- *Neisseria gonorrhoeae* (gonorrhoea);
- *Chlamydia trachomatis* (chlamydiosis); and
- Syphilis: as reflected by prevalence of treponemal seropositivity.

## **The Strategic Plan for Response to STI, HIV and AIDS**

### **The Plan**

The National Strategic Plan for STI/HIV/AIDS (2005-2008) is still in draft form and is being finalized. The plan will be reviewed every four years and the priority areas identified in the plan were:

- A coordinated and multisectoral strategic plan for addressing STI, HIV and AIDS.
- A comprehensive HIV, STI and TB testing, counselling and surveillance programme.
- Reduced incidence and rates of STIs in key groups and general population and more effective treatment at all health facilities.
- Safe blood supplies.
- Increase awareness among youth and other groups of the nature of HIV and other STIs and how to avoid infection.
- Better care and support to PLWHA and their families.

### **The Country Co-ordinated Mechanism and members**

The Country Coordinated Mechanism is a global fund requirement. The Kiribati HIV/AIDS and TB Task Force (KHATBTF) is a multi-sectoral non-government organization chaired by a representative from the Kiribati Protestant Church (Mr Batiri Bataua).

## **HIV/AIDS and STI case-reports**

### **Surveillance Structure**

- The case-definition used for AIDS surveillance is based on WHO classification and reporting, begun in 1989.
- HIV and AIDS cases are reported by sentinel laboratories to the HIV Programme Manager. A report is made on a monthly basis to the Director of Public Health Services.
- Data collected with reports include: gender, age and mode of transmission.

- Blood donors, visa applicants and seafarers are routinely screened for HIV infection. Positive samples are sent to Australia for confirmation.
- Other notifiable STIs are gonorrhoea and syphilis. Chlamydia is not a notifiable infection and testing for chlamydia is not available locally.
- Women receiving antenatal care are not screened for HIV or other STIs.

## Reported Cases

The first confirmed HIV infection in Kiribati occurred in 1991, and the number of people infected has continued to rise since then. A total of 46 HIV infections have been reported as of the end of 2004, the majority of which were in males (Table 3.1). In 2004 there were 23 persons living with HIV, 12 males and 11 females. The adult prevalence per 100 000 population aged 15-49 years was 49.4 in 2004. The primary mode of HIV transmission for Kiribati is heterosexual.

**Table 3.1: Distribution of cumulative reported HIV cases by sex and mode of transmission in Kiribati, 2004**

	Kiribati	6 PICTs in SGS project*	All PICTs
<b>Sex</b>			
Male	30	152	5749
Female	16	103	5043
Unknown		0	420
<b>Mode of transmission</b>			
Homo/bisexual	1	18	-
IDU	0	1	-
Heterosexual	31	202	-
Blood products	0	1	-
Mother to infant	6	21	-
Other/unknown	8	12	-

Director of Public Health Services – HIV Programme Manager<sup>1</sup>

\* Excluding reports from the Solomon Islands

STI reporting in Kiribati is limited by laboratory and public-health capacity. The total number of STI cases reported from 2001-2003 was 262; 156 were males and 106 were in females (Health Information Centre, Ministry of Health, Republic of Kiribati 2004).

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<sup>1</sup> HIV Programme Manager, Tungaru Central Hospital, Kiribati

# Second Generation HIV Surveillance Surveys

## Executive Summary: Kiribati

Summary of Millennium Development Goal 6: Combat HIV/AIDS, malaria and other diseases and UNGASS indicators for a concentrated/low-prevalence epidemic

Indicator	Population	Per cent
Millennium Development Goal 6: Combat HIV/AIDS, Malaria and other diseases <sup>1</sup>		
18. HIV Prevalence among 15-24 year old pregnant women	Pregnant Women (n=199)	0
19a: Condom use at last high-risk sex <sup>2</sup>	Seafarers (n=302)	
-Commercial		38.2
-Non-commercial		32.7
19b. % of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS	-	-
UNGASS		
% of (most at risk populations) who <u>ever</u> received HIV testing in the who know the results <sup>3</sup>	Seafarers (n=302)	66.2
% of (most at risk populations) who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission <sup>4</sup>	Seafarers (n=302)	23.2
% of (most at risk populations) who are HIV infected	Seafarers (n=302)	0

1 The target relevant to this goal is "Have halted by 2015 and begun to reverse the spread of HIV/AIDS". This target comprises of a series of indicators, two of which are measurable for Kiribati from the SGS surveys.

2 Participants were asked for condom use at last sex with non-commercial and commercial partners separately. Therefore this indicator is reported separately for non-commercial and commercial partners.

3 UNGASS indicator was HIV testing and know the result in the last 12 months. Data collected for this survey was 'ever' tested.

4 Data not collected on healthy looking person having HIV. Indicator constructed using the following collected questions: condom protection; faithful partner; mosquito bite; sharing a meal.

## A. STI Prevalence Survey among pregnant women

### Methodology

A sample of 202 pregnant women, attending their first routine antenatal visit at 3 health centres, were consecutively recruited into the survey from December 2004 to February 2005. Participants completed a confidential questionnaire administered by trained interviewers to obtain demographic, behavioural and other information. All participants were provided with survey information organized by the Public Health Nurse in the form of leaflets or group information sessions prior to taking part in the survey. The questionnaire was translated into Kiribati language.

Confidential linked testing for HIV and other selected STIs (syphilis, gonorrhoea, and chlamydia) was undertaken. A 10ml blood sample and first catch urine specimen were collected from participants. Urine samples were collected and transferred daily to Tungaru Central Hospital for processing and storage. Frozen urine was shipped to Royal Women's Hospital, Melbourne for testing by PCR for *C.trachomatis* and *N.gonorrhoeae* using ROCHE COBAS Amplicor (Roche Diagnostics, Pleasanton, California, United States of America). All positive *N.gonorrhoeae*

specimens were confirmed by an alternate PCR assay (Tabrizi et al (2005)). Sera were tested at Tungaru Central Hospital using two Abbott tests: Determine Syphilis TP and Determine HIV-1/2 test kits. Positive samples were sent to South Western Sydney area Pathology Service, Sydney, Australia for confirmatory testing for syphilis and HIV infection.

## Summary of methods for SPS Survey, Kiribati

Survey design	Confidential Linked Testing
Sample size	202 (no refusers)
Sampling method	Consecutive
Site locations	3 Health Centres – Betio, Bairiki and Temaiku
Type of consent	Written
Administration of questionnaire	Interviewer administered with an average time taken to complete was 25 minutes
Data collection period	December 2004 – February 2005
Laboratory tests	HIV: Abbott Determine rapid HIV a-b test Syphilis: Abbott Determine TP, confirmatory tests TPPA and FTA AB. Gonorrhoea and Chlamydia: Urine PCR

## FHI Indicators

**Table 3.2: Selected indicators of STIs and sexual behaviour among 199 pregnant women in Kiribati**

Key indicators	<25 years (n=78)	≥25 years (n=121)	Total (n=199)
HIV prevalence (%)	0	0	0
Syphilis prevalence (%)	4.1	0.9	2.1
Chlamydia prevalence (%)	20.0	8.5	13.0
Gonorrhoea prevalence (%)	0	0	0
Any STI prevalence (%)	23.6	8.8	14.6
Median age at first sex (years)			19 (12-32)
Proportion reporting commercial sex in last 12 months (%)			0.5
Median number of sex partners in life			1 (1-10)
Proportion having no incorrect beliefs about mother to child transmission <sup>1</sup> (%)			69.8

<sup>1</sup> based on knowledge of whether a pregnant woman infected with HIV/AIDS can transmit the virus to her unborn baby and whether a woman with HIV/AIDS can transmit the virus to her newborn child through breastfeeding

## Demographic characteristics

All eligible participants agreed to take part in the survey. A total of 202 pregnant women from three main antenatal clinics on Tarawa Island were recruited. Three participants aged less than 18 years (range 15-17 years) who did not satisfy the age inclusion criteria of 18-44 years and were excluded from the final analysis, leaving a survey population of 199 pregnant women.

Participants' ages ranged from 18-44 years (mean 27.8 years, standard deviation 6.2 years), with 39.2% (78) aged 25 years and less (Table 3.3). More than 90% of women were married and currently living with their spouses. The median age at first marriage was 20 years (range 14-33 years). The majority of women (62.8%) reported their occupation as home duties/not employed, while the occupation of the baby's father varied among unemployed, government worker,

seafarers/fisherman, company worker, student and police/military.

**Table 3.3: Demographic characteristics of 199 pregnant women in Kiribati**

Characteristic	Number	Percentage
<b>Age group (years)</b>		
18-19	7	3.5
20-24	71	35.7
25-29	44	22.1
30-34	45	22.6
35-39	23	11.6
40-44	9	4.5
<b>Residence</b>		
Urban village	189	95.0
Rural village	10	5.0
<b>Education</b>		
Never attended school	8	4.0
Primary school	45	22.6
Secondary school	126	63.3
Higher (university/college)	16	8.1
Not stated	4	2.0
<b>Ever married</b>		
Yes	194	97.5
No	3	1.5
Not stated	2	1.0
<b>Current living arrangement</b>		
Married, living with spouse	186	93.5
Married, living with other sexual partner	1	0.5
Married, not living with spouse or other partner	7	3.5
Not married, not living with sexual partner	2	1.0
Not stated	3	1.5
<b>Occupation of baby's father</b>		
Unemployed	53	26.6
Government worker	46	23.1
Seafarer/Fisherman	30	15.1
Company worker	22	11.1
Student	14	7.1
Police/Military	12	6.0
Other	21	10.5
Not stated	1	0.5

### **Pregnancy characteristics**

Among the 199 pregnant women, 61 (30.7%) were primiparous. The median gestation was 20 weeks. Few (5.0%) women reported using at least one type of contraceptive in the past year. The most popular contraceptive was Depo-Provera or injectables.

## Risk behaviours

Table 3.4 details selected risk and sexual behavioural characteristics of the women by age category. The median age at first sex was 19 years and ranged from 12 to 32 years.

The median number of lifetime sexual partners and sexual partners in the last 12 months was one (range 1-10 and 1-5 respectively). There were 41 (20.6%) women reporting multiple sexual partners in their lifetime, although only nine (4.5%) women had multiple partners in the last 12 months.

Few women reported having had commercial sex (1, 0.5%) or concurrent partners (17, 8.5%) in the last 12 months. Only 10% (20, 10.6%) of women had reported ever using a condom in life. There were two women who reported being diagnosed with an STI in the last 12 months, one gonorrhoea and one unspecified bacterial infection.

**Table 3.4: Behavioural characteristics of 199 pregnant women by age in Kiribati**

Outcome	<25 years		≥25 years		Total	
	No.	%	No.	%	No.	%
Median age at first sex	19		20		19	
Age at first sex						
<18	19	24.3	19	15.7	38	19.1
≥18	58	74.4	100	82.6	158	79.4
Not stated	1	1.3	2	1.7	3	1.5
Number of sexual partners in life						
1	64	82.1	81	66.9	145	72.9
≥2	11	14.1	30	24.8	41	20.6
Not stated	3	3.8	10	8.3	13	6.5
Number of sexual partners in last 12 months						
1	70	89.7	102	84.3	172	86.4
≥2	3	3.9	6	5.0	9	4.5
Not stated	5	6.4	13	10.7	18	9.1
Sex for money or gift in last 12 months						
Yes	0		1	0.8	1	0.5
No	78	100.0	119	98.4	197	99.0
Not stated	0		1	0.8	1	0.5
Concurrent partner in last 12 months						
Yes	7	9.0	10	8.3	17	8.5
No	70	89.7	107	88.4	177	89.0
Not stated	1	1.3	4	3.3	5	2.5

The majority of women (69.8%) were aware that HIV can be transmitted from a mother to her unborn baby and through breast feeding. Only 42.2% women thought a person could get confidential HIV testing in their community.

## Prevalence of HIV and other sexually transmitted infections

HIV and syphilis serology results were available for 188 pregnant women. Of these, four (2.1%) were diagnosed with syphilis and none were diagnosed with HIV infection.

Among the 192 women with available urine specimens, 25 (13.0%) were diagnosed with chlamydia. No gonorrhoea infection was detected. The prevalence of any STI among women who had both urine and blood testing was 14.6% (27/185) (Table 3.5).

**Table 3.5: Prevalence of HIV and other STIs among pregnant women Kiribati**

Sexually transmitted infection	Number tested	Number infected	Prevalence (%)	95% CI
Syphilis	188	4	2.1	0.6-4.2
HIV	188	0	0	---
Chlamydia	192	25	13.0	8.3-17.8
Gonorrhoea	192	0	0	---
Any STI	185	27	14.6	9.5-19.7

Table 3.6 details chlamydia infection by demographic characteristics and sexual behaviour. Chlamydia infection was more common among younger women. Women aged <25 years were more likely to be infected than older women (20.0% versus 8.5%, chi square 5.3, p=0.02).



**Table 3.6: Prevalence of STI by selected demographic and risk factors among 199 pregnant women, Kiribati**

	Chlamydia		
	Total no. of women	No. of infections	Prevalence (%)
<b>Age</b>			
<25	75	15	20.0
≥25	117	10	8.5
<b>Marriage</b>			
Yes	188	25	13.3
No	2	0	
<b>Education</b>			
Never attended school	8	1	12.5
Primary school	44	6	13.6
Secondary school	121	15	12.4
Higher (university/college)	15	2	13.3
<b>Current living area</b>			
Urban city	183	25	13.7
Rural village	9	0	
<b>Age at first sex</b>			
<18	37	5	13.5
≥18	152	20	13.2
<b>Number of sexual partners in life</b>			
1	141	18	12.8
≥2	38	5	13.2
<b>Number of sexual partners in last 12 months</b>			
1	166	21	12.7
≥2	8	2	25.0
<b>Sex for money/gift in last 12 months</b>			
Yes	1	0	
No	190	25	13.2
<b>Concurrent partner in last 12 months</b>			
Yes	16	3	18.8
No	171	22	12.9
<b>Ever used condom</b>			
Yes	20	6	30.0
No	166	19	11.4

## **B: Combined HIV Surveillance Survey and Behavioural Surveillance Survey among Seafarers**

### **Methodology**

Samples of 304 seafarers, attending four sites on Tarawa, Kiribati were consecutively recruited into the survey from December 2004 to July 2005. Participants completed a confidential questionnaire administered by trained interviewers to obtain demographic, behavioural and other information. All participants were provided with survey information in the form of leaflets or group information sessions prior to taking part in the survey. Participation in the survey was voluntary and informed consent was obtained from all eligible participants prior to data and sample collection. Questionnaires were not translated into local language as seafarers are required as

part of their training to speak a competent level of English.

Confidential linked testing for HIV was undertaken. A 5ml blood sample was collected from participants and sera were tested at Tungaru Central Hospital using a Determine HIV-1/2 test kit. All reactive samples were sent to South Western Sydney Area Pathology Service, Sydney, Australia for confirmatory testing.

## Summary of methods for combined HSS/BSS Survey, Kiribati

Population	Seafarers
Survey design	Confidential Linked Testing
Sample size	304 (5 refusers)
Sampling method	Consecutive
Site locations	Marine Training Centre, Kiribati Islands Overseas Seafarers Union, Seamen's Hostel, Fisheries Training Centre
Type of consent	Written
Administration of questionnaire	Interviewer administered with an average time taken to complete of 40 minutes
Data collection period	December 2004 – July 2005
Laboratory tests	HIV: Abbott Determine rapid HIV 1/2 test. Confirmation repeat ELISA and Western Blot.

## FHI Indicators

**Table 3.7: Selected indicators of HIV and sexual behaviour among 302 Seafarers in Kiribati, 2005**

Indicator	N=302
HIV prevalence (%)	0
Median age at first sex	18 (10-32)
Median number of female sex partners in the last 12 months	1 (0-106)
Proportion having sex with female casual partners in the last 12 months (%)	17.2
Median number of female casual partners in last 12 months	0 (0-30)
Proportion of adult male using condoms at last sex with female casual partner in the last 12 months (%)	32.7
Consistent condom use of adult male with female casual partners in last 12 months. (%)	21.2
Proportion of adult male reporting having sex with female commercial partners in last 12 months (%)	22.5
Median number of female commercial partners in last 12 months	0 (0-40)
Proportion of adult male using condoms at last female commercial sex (%)	38.2
Consistent condom use of adult male with female commercial partners in last 12 months. (%)	22.1
Proportion of adult males reporting sex with men in the last 12 months(%)	1.0
Proportion of adult males reporting use of condoms at last anal sex with male partner (%)	---
Proportion who have ever received HIV testing and know the result (%)	66.2
Correct knowledge of HIV/AIDS prevention methods <sup>1</sup> (%)	26.5
No incorrect beliefs about HIV/AIDS transmission <sup>2</sup> (%)	61.9
Proportion who both report correct knowledge of HIV/AIDS prevention and no incorrect beliefs about HIV/AIDS transmission (%)	16.6

1 Respondents who can correctly identify consistent condom use, mutual monogamy between partners and abstaining from sex as methods to reduce risk of HIV transmission

2 Respondents who know a person cannot get HIV from a mosquito bite or by sharing a meal with someone who is infected

## Demographic characteristics

A total of 304 male seafarers were recruited from three sites in Kiribati. Five seafarers declined to participate in the survey. Based on the inclusion criteria, two participants aged 56 and 58 years were excluded from analyses, leaving 302 male seafarers in the final analysis.

Participants' ages ranged from 21-54 years (mean 37.4 years, standard deviation 8.5 years), with 57.9% (175) over 34 years of age (Table 3.8). More than 86% seafarers were from the capital city or urban villages. The majority of seafarers (59.3%) had attended secondary school and only 3.3% had attended university/college. More than two thirds of participants reported having been away from home for more than one month in the last 12 months. Micronesian was the dominant ethnic group among the participants.

More than two thirds of seafarers were married and currently living with their spouses. The median age at first marriage was 24 with a range from 16 to 46 years. More than 15% of married seafarers reported they had more than one wife.

The majority (96.4%) of seafarers had marine work experience outside of Kiribati. The average length of time away home during last the contract was 12.1 months with a range from 1 to 48 months. The most common job on board was able-bodied seamen, followed by Motorman, ordinary seamen and Bosun (a petty officer on a merchant ship who controls the work of other seamen).

## Prevalence of HIV

There was no HIV infection detected among seafarers participating in the survey.

**Table 3.8: Demographic characteristics of 302 seafarers Kiribati 2005**

Characteristic	Number	Percentage
<b>Age group (years)</b>		
20-24	11	3.6
25-29	55	18.2
30-34	61	20.2
35-39	55	18.2
40-44	40	13.2
45-49	53	17.5
50-54	27	8.9
<b>Residence</b>		
Capital city	100	33.1
Urban village	160	53.0
Rural village	32	10.6
Other	6	2.0
Not stated	4	1.3
<b>Education</b>		
Primary school	105	34.8
Secondary school	179	59.3
Higher (university/college)	10	3.3
Not stated	8	2.6
<b>Away from home for more than 30 days in last 12 months</b>		
Yes	222	73.5
No	73	24.2
Not stated	7	2.3
<b>Ever married</b>		
Yes	255	84.4
No	44	14.6
Not stated	3	1.0
<b>Current living status</b>		
Married, living with spouse	202	66.9
Married, living with other sexual partner	14	4.6
Married, not living with spouse or other partner	5	1.7
Not married, living with sexual partner	21	7.0
Not married, not living with sexual partner	19	6.3
Not stated	41	13.6

## Substance behaviours

Approximately half (52%) of participants were current smokers with a median number of cigarettes of 15 (0-50) per day. Most seafarers (75.2%) reported drinking alcohol in the last 4 weeks, and over 42% had taken alcohol at least once a week. The median number of drinks per session was 10 with a range from 1 to 47. About 12% of seafarers had used at least one kind of drug, and the most popular drug was ice/crystal/shabu, followed by cocaine. Two (0.7%) participants reported having had injected drugs in the last 12 months.

## Sexual behaviours

Table 3.9 details selected behavioural characteristics of seafarers by age group. The majority (90.1%) of seafarers had sex in the last 12 months, and the median age at first sex was 18 (range 10-32 years). The median number of partners in the last 12 months was one (0-106).

Among all participants, 68 (22.5%) had sex with commercial female partner(s), and 52 (17.2%) had sex with casual female partners in the last 12 months. The median number of commercial and casual female partners of all participants was zero (range 0-40 and 0-30 respectively). Among all participants, 111 (36.8%) had multiple female partners in the last 12 months.

Few seafarers (3 1.0%) reported having had sex with a male partner in their lifetime, and none reported male sex in the last 12 months.

A low proportion of condom use at last sex with commercial and casual partners was observed. Only 26 (38.2%) of 68 seafarers reported using condoms at last sex with commercial female partners, consequently only 22.1% had consistently used a condom with commercial female partners. Among those seafarers with casual partners in the last 12 months, 17 of 52 (32.7%) reported using a condom at last sex with female casual partners, and only 21.2% had used condoms consistently.

There were 18 (6.0%) seafarers who reported having been diagnosed with an STD in the last 12 months, most frequently gonorrhoea.

**Table 3.9: Sexual behaviours of 302 seafarers by age group Kiribati 2005**

	20-29		30-39		40-54		Total	
	No.	%	No.	%	No.	%	No.	%
<b>Ever sex in life</b>								
Yes	64	97.0	112	96.6	114	95.0	290	96.0
No	2	3.0	0		1	0.8	3	1.0
Not stated	0		4	3.4	5	4.2	9	3.0
Median age at first sex (yrs)	18		18		18		18	
<b>Sex in last 12 months</b>								
Yes	58	87.9	111	95.7	103	85.8	272	90.1
No	8	12.1	1	0.9	15	12.5	24	7.9
Not stated	0		4	3.4	2	1.7	6	2.0
Median number of female partners in the last 12 months	2		1		1		1	
Number of partners in the last 12 months								
0	8	12.1	1	0.9	15	12.5	24	7.9
1	20	30.3	62	53.4	55	45.8	137	45.4
≥2	32	48.5	44	37.9	35	29.2	111	36.8
Not stated	6	9.1	9	7.8	15	12.5	30	9.9
<b>MSM in life</b>								
Yes	0		1	0.9	2	1.7	3	1.0
No	64	97.0	114	98.3	112	93.3	290	96.0
Not stated	2	3.0	1	0.8	6	5.0	9	3.0
<b>Ever diagnosed with STD in last 12 month</b>								
Yes	2	3.0	5	4.3	11	9.2	18	6.0
No	61	92.4	108	93.1	104	86.7	273	90.4
Not stated	3	4.6	3	2.6	5	4.1	11	3.6
<b>Sex with commercial partner in last 12 months</b>								
Yes	19	28.8	26	22.4	23	19.2	68	22.5
No	35	53.0	55	47.4	65	54.2	155	51.3
Not stated	12	18.2	35	30.2	32	26.6	79	26.2
<b>Sex with casual partner in last 12 months</b>								
Yes	17	25.7	19	16.8	16	13.3	52	17.2
No	37	56.1	62	53.4	65	54.7	164	54.3
Not stated	12	18.2	35	30.2	39	32.5	86	28.5

## HIV Knowledge, belief and attitudes

Knowledge of HIV protection methods was poor among seafarers (Table 3.10). Only 80 (26.5%) of participants had all correct knowledge of HIV protection patterns of condom protection (69.9%), faithful partner (48.0%) and abstinence from sex (57.3%). A higher proportion (61.9%) had correct knowledge about HIV transmission. Only 16.6% seafarers had both correct HIV protection knowledge and belief of HIV transmission. There were 155 seafarers (51.3%) who thought that a confidential HIV test was possible in their community. About two thirds of participants have had an HIV test and knew the result.

**Table 3.10: HIV knowledge, belief and stigma of 302 seafarers Kiribati 2005**

	20-29		30-39		40-54		Total	
	No.	%	No.	%	No.	%	No.	%
Answer of correct knowledge of HIV/AIDS prevention methods <sup>1</sup>								
Correct	19	28.8	29	25.0	32	26.7	80	26.5
All other answers	47	71.2	87	75.0	88	73.3	222	73.5
Answer of no incorrect beliefs about HIV/AIDS transmission <sup>2</sup>								
Correct	44	66.7	62	53.4	81	67.5	187	61.9
All other answers	22	33.3	54	46.6	39	32.5	115	38.1
Answer of correct knowledge of HIV prevention and no incorrect beliefs about HIV/AIDS transmission								
Correct	13	19.7	14	12.1	23	19.2	50	16.6
All other answers	53	80.3	102	87.9	97	80.8	252	83.4
Confidential test in the community								
Yes	33	50.0	53	45.7	69	57.5	155	51.3
No	26	39.4	49	42.2	41	34.2	116	38.4
Not stated	7	10.6	14	12.1	10	8.3	31	10.3
HIV tested and result known								
Yes	43	65.1	76	65.5	81	67.5	200	66.2
No	17	25.8	34	29.3	33	27.5	84	27.8
Not stated	6	9.1	6	5.2	6	5.0	18	6.0

1 Respondents who can correctly identify consistent condom use, mutual monogamy between partners and abstaining from sex as methods to reduce risk of HIV transmission

2 Respondents who know a person cannot get HIV from a mosquito bite or by sharing a meal with someone who is infected

## Summary

- Kiribati is a country with a low prevalence of HIV infection. No HIV infection was identified among the pregnant women participating in the SPS surveys or among the Seafarers participating in the combined HSS/BSS survey.
- Chlamydia is endemic among pregnant women. Strategies to address this should be developed at the country level. No gonorrhoea was detected among the pregnant women surveyed.
- The population remains highly vulnerable to HIV infection with biologic, behavioural and sexual indicators of risk. For example seafarers participating in the behavioural surveillance survey reported a low knowledge of HIV/AIDS. Over one in five participants reported having had sex with a commercial sex worker in the last 12 months and consistent condom use with sex workers was low.

# 4. Samoa

## Introduction

Samoa is an independent island nation in the South Pacific Ocean which comprises of two major islands (Savaii and Upolu) that total approximately 1000 square miles. The population is approximately 180 000 persons (2001 census) with 30% of people living in urban areas. Approximately half (83 000) of the population is aged 15-49 years and more than 90% are native Samoan. Samoa has an estimated population growth rate of 1.0% and a fertility rate of approximately 4.0 children per woman. The crude birth rate is 29.0 per 1000 population<sup>1</sup>. The average number of babies born per year is around 5000 (2001), with more than 66% of these delivered in hospitals. The average life expectancy for Samoa is 71.8 years for males and 73.8 years for females.

Health care delivery is primarily through two main referral hospitals in Upolu and Savaii and one private hospital located in the urban area of Samoa. In addition there are eight district hospitals, five on the island of Upolu and three on Savaii. The total number of doctors currently working in government hospitals is 66, including doctors from overseas, while there are more than 13 working in the private sector. Samoa is classified by the United Nations as a least developed country and the estimated Gross Domestic Product (GDP) constant per capita was WST 5366 (US\$1853) in 2004<sup>2</sup>. Samoa is dependent on agriculture and fishing, which is primarily subsistence.

Prevention and control is the main component of Samoa's response to HIV/AIDS. Current programmes include media and health talks, workshops, condom distribution, clergy and youth programmes and initiatives organized by non-governmental organizations (NGOs) such as the Red Cross. The epidemiology of STIs in Samoa needs to be improved. The Samoan government, in collaboration with the WHO conducted a STI prevalence survey among pregnant women in 2000 to obtain baseline information on the epidemiology of STIs and HIV in Apia. Information from this survey was used to inform current policies and programs. High rates of STIs in a low-risk population were observed (22), indicating that surveillance, prevention and treatment strategies for HIV and other STIs need to be strengthened. In 2003, the GFATM funded six PICTs to conduct a series of prevalence surveys among selected population groups. This chapter reports the findings of the surveys carried out in Samoa during 2004 to 2005.

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1 Ministry of Finance, Statistical Service Division, Report of the Census of Population and Housing

2 [www.spc.int/prism/economic/nataccts.html](http://www.spc.int/prism/economic/nataccts.html). Accessed October 2005



# Survey Personnel

## Local team

Name	Affiliation	Role
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## Regional team

Name	Affiliation	Role
Dr Susan Cliffe	University New South Wales	Epidemiologist
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Dr Yueping Alex Wang	University New South Wales	Epidemiologist

## **Funding arrangements**

The survey was supported by the Ministry of Health Samoa, WHO Western Pacific Regional Office, Secretariat of the Pacific Community, with principle funding from the Global Fund to Fight AIDS, Tuberculosis and Malaria.

## **Ethics Approval**

The survey was approved by the Samoan Health Research Committee of the Ministry of Health and the Human Research Ethics Committee, UNSW, Australia. The project proposal was also approved by the Technical Advisory Committee (TAC) and the National AIDS Coordinating Committee (NACC).

## **Objectives**

For the first round of SGS surveys, the objectives were as follows:

- strengthen HIV surveillance capacity in Samoa in conducting HIV/STI and behavioural surveys;
- provide baseline data on the HIV epidemic for future monitoring of HIV trends in selected population sub-groups;
- analyse demographic and behavioural factors in these groups;
- identify STI prevalence in asymptomatic pregnant women;
- provide information on the effectiveness of HIV prevention and control programmes.

Infections to be detected in the surveys included:

- Human immunodeficiency virus (HIV);
- *Neisseria gonorrhoeae* (gonorrhoea);
- *Chlamydia trachomatis* (chlamydiosis); and
- Syphilis: as reflected by prevalence of treponemal seropositivity.

## **The Strategic Plan for Response to STI, HIV and AIDS**

### **The Plan**

The National Plan of Action for HIV/AIDS and STIs was based on and developed from the National HIV/AIDS Policy (February 2001); the Framework for the National Plan of Action for HIV/AIDS in Samoa (November 2001); the Recommendations of the Consultative Meeting on an Integrated Control of HIV/AIDS/STI in Samoa (November 2001); the Samoa's Proposal for the Global Fund for HIV/AIDS and Tuberculosis (August 2002); and the Strategic Plan on Responding to the Impact of HIV/AIDS on Women in Samoa: 2001-2005.

The HIV Programme is a national programme guided by the National Plan of Action with activities undertaken by a variety of stakeholders. The leader of these programmes is the Ministry of Health. The plan is divided into three key areas that combine all the objectives and strategies identified in the above documents, namely:

- Strengthen national coordination for the planning and implementation of HIV/AIDS-STI programs and activities
- Strengthen national health promotion and prevention programmes for HIV/AIDS-STI in Samoa
- Strengthen the management, treatment and surveillance of HIV/AIDS-STI cases in Samoa

Samoa's NACC/CCM made a decision in 2004 to develop and formulate a Samoa National HIV/AIDS Strategy to be in line with the Principles of the UNGASS 11 Key Strategic Areas, the Pacific Regional Strategy's eight thematic areas, Samoa's Global Fund Plan of Action 2003-2008 and Samoa's Millennium Development Goals (MDGs).

### **The Country Coordinated Mechanism and members**

The National AIDS Coordinating Committee, also known as Country Coordinated Mechanism is a global fund requirement. In Samoa, NACC, which has a multi-sectoral membership, was established further to a Cabinet mandate in 1987 to be the overarching council responsible for the coordination of all HIV/AIDS programs in Samoa. At the end of 2002, further to the Global Fund requirements, NACC became the CCM for Samoa as it relates to HIV/AIDS and Tuberculosis. It is chaired by the CEO of the Ministry of Health. As at beginning of 2005, the Samoa NACC/CCM comprised of 20 members, with 10 members (50%) being NGO representatives, eight (40%) from Government, and two others (10%) from WHO and a Media Corporation.

## **HIV/AIDS and STI case reports**

### **Surveillance Structure**

- The case definition used for AIDS surveillance is based on WHO classification and reporting begun in 1990.
- HIV and AIDS cases are notified by medical and laboratory site offices to the Assistant Chief Executive Officer, Public Health Services and the Medical Officer for STI-HIV/AIDS. Cases are reported as numbers to the Health Information Section for annual reports.
- Data collected with reports include gender, religion, residence, occupation, sexual history, risk assessment, investigations, treatment and follow-up.
- STI patients, antenatal clinic attendees, immigration clients (including seafarers) and blood donors are routinely screened for HIV infection.
- Gonorrhoea, syphilis and chlamydia are notifiable infections, although chlamydia testing is not available locally. All antenatal clinic attendees and STI patients are screened for HIV, hepatitis B and syphilis.

## Reported Cases

The known prevalence of HIV/AIDS is low in Samoa. A total of 12 cases have been reported as of the end of 2004, of which eight cases were identified as acquiring infection from overseas. In total, four people were living with HIV in Samoa in 2004. The adult prevalence in 2004 was 4.8 per 100 000 population aged 15-49 years. Reported cases of HIV infection have been mostly in males with the most common mode of transmission being heterosexual. Only two cases of HIV infection have been reported in children.

**Table 4.1: Distribution of cumulative reported HIV cases by sex and mode of transmission in Samoa, end of 2004**

	Samoa	6 PICTs in SGS project*	All PICTs
<b>Sex</b>			
Male	8	152	5749
Female	4	103	5043
Unknown	0	0	420
<b>Mode of transmission</b>			
Homo/bisexual	2	18	-
IDU	0	1	-
Heterosexual	8	202	-
Blood products	0	1	-
Mother to infant	2	21	-
Other/unknown	0	12	-

Source: Ministry of Health/STI-HIV/AIDS Clinic  
\* Excluding reports from the Solomon Islands

Reporting on STIs is limited by the lack of laboratory and public-health information capacity.

Table 4.2 shows reported number of STI cases as available between 1999 to 2004. There were 140 reports of both syphilis infection (2004) and gonorrhoea infection (2002) and 127 reports of other infections (2004).

**Table 4.2: Reported number of STI cases in Samoa, 1999-2004**

	1999	2000	2001	2002	2003	2004
Syphilis	84	-	-	-	-	140
Gonorrhoea	-	-	139	140	-	-
Other	39	-	68	40	-	127

Source: Samoa Ministry of Health, STI/HIV/AIDS Clinic

# Second Generation HIV Surveillance Surveys

## Executive Summary: Samoa

Summary of Millennium Development Goal 6: Combat HIV/AIDS, malaria and other diseases and UNGASS indicators for a concentrated/low-prevalence Epidemic

Indicator	Population	%
Millennium Development Goal 6: Combat HIV/AIDS, Malaria and other diseases <sup>1</sup>		
18. HIV Prevalence among 15-24 year old pregnant women	Pregnant Women (n=299)	0
19a: Condom use at last high-risk sex <sup>2</sup>	Youth (n=300)	
- Commercial		7.1
- Non-commercial		14.0
19b. % of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS <sup>3</sup>	Youth (n=300)	14.3
UNGASS		
% of (most at risk populations) who <u>ever</u> received HIV testing in the who know the results <sup>4</sup>	Youth (n=300)	1.7
% of (most at risk populations) who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission <sup>3</sup>	Youth (n=300)	14.3
% of (most at risk populations) who are HIV infected	STI Clinic attendees (n=101)	0

1 The target relevant to this goal is "Have halted by 2015 and begun to reverse the spread of HIV/AIDS". This target comprises of a series of indicators, two of which are measurable for Samoa from the SGS surveys.

2 Participants were asked for condom use at last sex with non-commercial and commercial partners separately. Therefore this indicator is reported separately for non-commercial and commercial partners. 3 Data not collected on transmission through sharing a meal. Indicator constructed using the following collected questions: condom protection; faithful partner; mosquito bite; healthy looking person with HIV. 4 UNGASS indicator was HIV testing and know the result in the last 12 months. Data collected for this survey was 'ever' tested.

## A. STI Prevalence Survey among pregnant women

### Methodology

A sample of 300 pregnant women attending their first routine antenatal visit at the Antenatal clinic of the Tupua Tamasese Meaole Hospital (TTM) were consecutively recruited into the survey from November 2004 to March 2005. Participants completed a confidential questionnaire administered by trained interviewers to obtain demographic, behavioural and other information. All participants were provided with survey information in the form of leaflets or group information sessions prior to taking part in the survey. The questionnaire was translated into Samoan by the survey team.

Confidential linked testing for HIV and other selected STIs (syphilis, gonorrhoea, and chlamydia) was undertaken. A 10ml blood sample and first catch urine specimen were collected from participants. Urine samples were collected and transferred daily to the local laboratory for storage. Frozen urine was shipped to Royal Women's Hospital, Melbourne for testing using PCR for C.Trachomatis and N.gonorrhoeae. Sera were tested at the National Laboratory in the Tupua Tamasese Meaole Hospital using Abbott Determine TP test kit for treponemal seroreactivity and Serodia test for HIV infection. Following the laboratory testing algorithm, positive samples from the two consecutive tests were sent to the NRL, Australia for confirmation by Western Blot.

## Summary of methods for SPS Survey, Samoa

Survey design	Confidential linked testing
Sample size	300
Sampling method	Consecutive
Site locations	Pregnant mother attending ANC at the main Tupua Tamasese Meaole Hospital in Apia
Type of consent	Written
Administration of questionnaire	Interviewer administered with an average time of completion of 20-30 minutes.
Data collection period	November 2004 to March 2005
Laboratory tests	HIV: Serodia HIV test Syphilis: Abbott Determine TP. Trichomonas: normal saline HBSAg: one step cassette Gonorrhoea and Chlamydia: PCR testing

## FHI Indicators

**Table 4.3: Selected indicators of STIs and sexual behaviour among 299 pregnant women, Samoa 2004-2005**

Key indicators	<25 years (n=119)	≥25 years (n=180)	Total (n=299)
HIV prevalence (%)	0	0	0
Syphilis prevalence (%)	0	0	0
Chlamydia prevalence (%)	40.7	17.5	26.8
Gonorrhoea prevalence (%)	5.9	0	2.3
Any STI prevalence (%)	41.5	17.8	27.2
Median age at first sex (years)			19 (12-34)
Proportion of women reporting commercial sex in last 12 months (%)			2.7
Median number of sex partners in life			1 (1-6)
Proportion having no incorrect beliefs about mother to child transmission <sup>1</sup> (%)			90.6

<sup>1</sup> based on knowledge of whether a pregnant woman infected with HIV/AIDS can transmit the virus to her unborn baby and whether a woman with HIV/AIDS can transmit the virus to her newborn child through breastfeeding

## Demographic characteristics

A total of 300 pregnant women from Samoa were recruited. One woman aged 47 years was excluded as she did not meet the inclusion criteria, which left 299 women in the final sample. Participants' ages ranged from 15-44 years (mean 26.9 years, standard deviation 6.2 years), with 39.8% (119) aged less than 25 years (Table 4.4). More than half of the women were married and currently living with their spouses. The median age at first marriage was 23 years (range 14-40 years). The majority of women (75.3%) were housewives, while the occupation of the baby's father varied among company worker, government worker, farmer, business men, transport worker or seafarers/fishermen (Table 4.4).

**Table 4.4: Demographic characteristics of 299 pregnant women in Samoa**

Characteristic	Number	Percentage
<b>Age group (years)</b>		
15-19	29	9.7
20-24	90	30.1
25-29	80	26.8
30-34	63	21.1
35-39	27	9.0
40-44	10	3.3
<b>Residence</b>		
Urban village	195	65.2
Rural village	104	34.8
<b>Education</b>		
Primary school	18	6.0
Secondary school	186	62.2
Higher (university/college)	95	31.8
<b>Ever married</b>		
Yes	189	63.2
No	110	36.8
<b>Current living arrangement</b>		
Married, living with spouse	178	59.5
Married, not living with spouse or other partner	9	3.0
Not married, living with sexual partner	76	25.4
Not married, not living with sexual partner	34	11.4
Not stated	2	0.7
<b>Occupation of baby's father</b>		
Company worker	88	29.4
Government worker	49	16.4
Farmer	48	16.1
Business men	26	8.7
Unemployed	24	8.0
Transport worker	18	6.0
Seafarer/Fisherman	8	2.7
Police/Military	6	2.0
Student	6	2.0
Other	20	6.7
Not stated	6	2.0

## Pregnancy characteristics

Among the 299 pregnant women, 103 (34.4%) were primiparous. The median gestation was 30 weeks with a range from 4-39 weeks. Twenty-eight women (27.1%) reported using at least one contraceptive in the past year. The most popular contraceptive was Depo-Provera or injectables, followed by birth control pills and male condoms.

## Risk behaviours

Risk and sexual behaviours were reported among pregnant women in the survey and Table 4.5 details selected behavioural characteristics by age category. The median age at first sex was 19 years and ranged from 12 to 34 years. The median number of lifetime sexual partners was one

(range 1-6) and the median number of sexual partner in last 12 months was one (range 1-4). Nearly half (45.2%) of the women reported multiple lifetime sexual partners, while only 35 (11.7%) women had multiple partners in the last 12 months.

Few women reported having had commercial sex (8, 2.7%) or concurrent partners (12, 4.0%) in the last 12 months. Only one woman reported being diagnosed with an STI (syphilis) in the past year.

The majority of women were aware that HIV can be transmitted from a mother to her unborn baby and through breast feeding and that a person could get confidential HIV testing in their community (90.6% and 84.6% respectively).

**Table 4.5: Behavioural characteristics of 299 pregnant women by age in Samoa**

Outcome	<25		≥25		Total	
	No.	%	No.	%	No.	%
Median age at first sex	19		20		19	
Age at first sex						
<18	33	27.7	25	13.9	58	19.4
≥18	86	72.3	155	86.1	241	80.6
Number of sexual partners in life						
1	68	57.1	84	46.7	152	50.8
≥2	47	39.5	88	48.9	135	45.2
Not stated	4	3.4	8	4.4	12	4.0
Number of sexual partners in last 12 months						
1	98	82.4	142	78.9	240	80.3
≥2	13	10.9	22	12.2	35	11.7
Not stated	8	6.7	16	8.9	24	8.0
Sex for money or gift in last 12 months						
Yes	5	4.2	3	1.7	8	2.7
No	113	95.0	176	97.8	289	96.6
Not stated	1	0.8	1	0.5	2	0.7
Concurrent partner in last 12 months						
Yes	3	2.5	9	5.0	12	4.0
No	116	97.5	168	93.3	284	95.0
Not stated	0		3	1.7	3	1.0

## Prevalence of HIV and other sexually transmitted infections

Among 298 women with available urine specimen, 80 (26.8%) were diagnosed with chlamydia and seven (2.3%) with gonorrhoea. No HIV or syphilis infections were detected (Table 4.6).

Among 298 women who had both urine and blood testing, 81 (27.2%) had at least one infection and six (2.0%) women had two infections.



**Table 4.6: Prevalence of HIV and other STIs among pregnant women, Samoa**

Sexually transmitted infection	Number tested	Number infected	Prevalence (%)	95% CI
Chlamydia	298	80	26.8	21.8-21.9
Gonorrhoea	298	7	2.3	0.6-4.1
Syphilis	299	0	0	-
HIV	299	0	0	-
Any STI	298	81	27.2	22.1-32.2

Table 4.7 shows prevalence of STI by selected demographic characteristics. There was an association between age and marital status and chlamydia infection. Younger women were more likely to be infected with chlamydia than older women (40.7% versus 17.8%, chi square 19.0,  $P < 0.01$ ). Women who were married were less likely to be infected than unmarried women (21.2% versus 36.7%, chi square 8.5,  $p < 0.01$ ).

**Table 4.7: Prevalence of chlamydia by selected demographic and risk factors among 299 pregnant women, Samoa**

	Chlamydia		
	Total	No.	%
<b>Age</b>			
<25	118	48	40.7
≥25	180	32	17.8
<b>Marriage</b>			
Yes	189	40	21.2
No	109	40	36.7
<b>Education</b>			
Primary school	18	5	27.8
Secondary school	185	52	28.1
Higher (university/college)	95	23	24.2
<b>Current living area</b>			
Urban city	195	52	26.7
Rural village	103	28	27.2
<b>Age at first sex</b>			
<18	58	22	37.9
≥18	240	58	24.2
<b>Number of sexual partners in life</b>			
1	152	32	21.1
≥2	134	46	34.3
<b>Number of sexual partners in last 12 months</b>			
1	240	63	26.3
≥2	35	14	40.0
<b>Sex for money/gift in last 12 months</b>			
Yes	8	5	62.5
No	288	74	25.7
<b>Concurrent partner in last 12 months</b>			
Yes	12	3	25.0
No	283	77	27.2
<b>Ever used condom</b>			
Yes	41	4	9.8
No	257	76	29.6

## B. HIV Surveillance Survey among STI Clinic attendees

### Methodology

A sample of 101 STI clinic patients attending a STI –HIV/AIDS clinic at the National Hospital were consecutively recruited into the survey from October 2004 to March 2005. Participants completed a confidential questionnaire administered by trained interviewers to obtain demographic, behavioural and other information. All participants were provided with survey information in the form of leaflets or group information sessions prior to taking part in the survey. The questionnaire had been translated into Samoan by the survey team.

Confidential linked testing for HIV was undertaken. A 5ml blood sample was collected from participants and sera were tested at the Samoa National laboratory using the Serodia HIV test. Following the laboratory testing algorithm, positive samples from the two consecutive tests were sent to the NRL, Australia for confirmation by Western Blot.

### Summary of methods for HSS Survey, Samoa

Population	STI clinic attenders
Survey design	Confidential linked testing
Sample size	101
Sampling method	Consecutive
Site locations	STI-HIV/AIDS clinic at the Main Hospital
Type of consent	Written
Administration of questionnaire	Interviewer administered with an average time of completion of 20-30 minutes
Data collection period	October 2004 to March 2005
Laboratory tests	HIV: Serodia HIV test Syphilis: RPR HBSAg: one step cassette

### FHI Indicators

**Table 4.8: Selected indicators of HIV and sexual behaviour among 101 STI clinic patients in Samoa**

Key indicators	N=101
HIV prevalence (%)	0
Median age at first sex (years)	18 (12-30)
Proportion of attendees having sex with more than one partner in the last 12 months (%)	54.4
Median number of sex partners in the last 12 months	2 (0-30)
Proportion of attendees reporting commercial sex in the last 12 months (%)	5.9
Proportion of men reporting sex with men in the last 12 months (%)	4.2
Proportion of attendees using condoms at last sex with female partner (%)	7.8
Proportion of men using condoms at last MSM (%)	0
Proportion of attendees using condoms with partner consistently (%)	1.1

## **Demographic characteristics**

A total of 101 participants including 71 male and 30 female STI clinic patients were recruited. Participants' ages ranged from 16-43 years (mean 24.6 years, standard deviation 5.8 years), with over half (56.4%) aged less than 25 years of age. The majority of participants were from the urban villages. More than 64% of participants were not married and not living with a sexual partner. The majority (91.1%) of participants had attended secondary school or higher. About half of the participants reported being away from home for more than one month in the last year. Over 55% had consumed alcohol at least once in the last month, with a median of six drinks (range 2-60). No participant reported injecting drug use in the last 12 months.

## **Sexual behaviour**

Table 4.8 shows selected behavioural indicators for STI clinic patients in the survey. The majority (89.1%) of participants had sex in last 12 months. The median age at first sex was 18 years and ranged from 12 to 30 years. Among all participants, three quarters (74.3%) had sex with regular partner(s) while few (5.9%) had sex with commercial partner(s). Nearly half (48.5%) had sex with casual partners in the last 12 months.

The median number of sexual partners for all participants was two (range 0 -30). For participants who had been sexually active in the last 12 month, the median sexual partner was also two (range 1- 30). Among all participants, about half (54.4%) had more than one partner in the last 12 months.

Most (91.1%) participants reported not having used a condom at last sex. Only 1.1% of participants used condoms every time, 3.3% almost every time and 10.0% sometimes.

Among male participants, five (7.0%) reported having had sex with men in their lifetime, and 3 (4.2%) in the last 12 months, none of which reported condom use at last sex. No male participant reported having had sex with men for money or a gift. About 12% of participants reported having concurrent sexual partners in the last 12 months. Over one fifth of participants were diagnosed with an STI in the last 12 months. The most prevalent reported STI was unspecified bacterial infection, followed by gonorrhoea, and genital discharge.

## **Prevalence of HIV**

There was no HIV detected among STI clinic patients participating in the survey.

## **Limitations of the Survey**

The HSS was carried out as a pilot survey to establish a methodology for surveying groups at higher risk of HIV infection. While results present an interesting profile of STI clinic patients, only a limited number of participants were surveyed and results should be interpreted within these limitations. In particular, interpretation of the HIV prevalence results should be with caution. Consideration of the necessary sample sizes required to reliably detect HIV prevalence in low prevalence settings should be given to future surveys.

## C. Behavioural Surveillance Survey Among Youth

A behavioural prevalence survey of sexual and risk behaviours related to HIV and or STI infection in 300 youth aged 15-24 years was conducted between October 2004 and March 2005. Participants were consecutively recruited and completed a confidential questionnaire administered by trained interviewers which included standardized questions on behavioural risk factors and attitudes towards HIV/AIDS. Participation in the survey was voluntary and informed consent was obtained from all eligible participants prior to data and sample collection.

### Summary of methods of BSS Survey, Samoa

Population	Youth (age 15-24 years, unmarried)
Sample size	300
Sampling method	Consecutive
Site locations	Urban tertiary school (Vaimauga College & Samoa Polytechnic Institution)
Type of consent	Verbal
Administration of questionnaire	Interviewer administered with an average time for completion of 20 minutes
Data collection period	October 2004 to March 2005

### FHI Indicators

**Table 4.9: Selected behavioural indicators in 300 youth in Samoa**

Indicator	N=300
Median age at first sex by gender (years)	
Total	17 (12-21)
Male	17 (12-21)
Female	17 (13-20)
Proportion of youth sexually active in the last 12 months (%)	26.7
Proportion of youth using condoms at first sex (%)	24.3
Proportion of youth with multiple partners in the last 12 months (%)	12.7
Median number of sex partners in the last 12 months	0 (0-10)
Proportion of youth using condoms at last sex with non-commercial partners (%)	14.0
Consistent condom use with non-commercial partners in last 12 months (%)	5.3
Proportion of young men reporting commercial sex in last 12 months (%)	8.2
Median number of commercial partners in last 12 months among young men	0 (1-6)
Proportion of young men using condoms at last commercial sex (%)	7.1 (1/14)
Consistent condom use of young men with commercial partners in last 12 months. (%)	0 (0/14)
Proportion of young men reporting sex with men in the last year (%)	14.7
Proportion who have ever received HIV testing and know the result (%)	1.7
Proportion reporting correct knowledge of HIV/AIDS prevention methods (%) <sup>1</sup>	56.7
Proportion reporting no incorrect beliefs about HIV/AIDS transmission (%) <sup>2</sup>	20.0
Proportion who both report correct knowledge of HIV/AIDS prevention and no incorrect beliefs about HIV/AIDS transmission (%) <sup>1</sup>	12.7
Proportion reporting accepting attitudes towards those living with HIV (%) <sup>3</sup>	21.7

1 Respondents who can correctly identify consistent condom use, mutual monogamy between partners and abstaining from sex as methods to reduce risk of HIV transmission.

2 Respondents who know a person cannot get HIV from a mosquito bite and that a healthy looking person can be infected with HIV.

3 Respondents who would be willing to share a meal with a person with HIV/AIDS and be willing to buy food from a shopkeeper who had HIV and would not want it to remain a secret if a family member had HIV infection.

## Demographic characteristics

A total of 300 young people, including 170 males (56.7%) and 130 females (43.3%) were recruited from two survey sites in Samoa. All participants satisfied the inclusion criteria. Participants' ages ranged from 15-23 years (mean 18.1 years, standard deviation 1.8 years), with 78.7% (236) aged less than 20 years of age (Table 4.10). The education level varied between secondary school (53.7%) and university and college (46.3%). The majority (97.7%) of the participants were currently living with their family or relatives.

Over a quarter of participants reported being away from home for more than one month in the last year. Nearly one half of youth did not report any religion with the most popular religion being Congregational Christian Church (EFKS) followed by Nasareth and Methodist. The majority of youth were of Samoan ethnicity and 13.3% with mixed ethnicity.

**Table 4.10: Demographic characteristics of 300 youth, Samoa**

Characteristic	Number	Percentage
<b>Age group (years)</b>		
15-19	236	78.7
20-24	64	21.3
<b>Gender</b>		
Male	170	56.7
Female	130	43.3
<b>Education</b>		
Secondary school	161	53.7
Higher (university/college)	139	46.3
<b>Current living status</b>		
Alone	1	3
With family/relatives	293	97.7
With co-worker/students	6	2.0
<b>Away from home for more than 30 days in last 12 months</b>		
Yes	79	26.3
No	220	73.3
Not stated	1	0.3

## Substance behaviour

About one third of participants consumed alcohol at least once in the last four weeks. Among all 300 participants, 120 reported they had used drugs in their lifetime, the most popular drug was tobacco, followed by kava, marijuana, and mushroom. None of the participants reported injecting drug use in the last 12 months.

## Sexual behaviour

Table 4.9 shows selected behavioural indicators among youth in the survey. Over one third of youth reported ever having sex in their life time, and 26.7% had sex in the last 12 months. The median age at first sex was 17 years and ranged from 12 to 21 years. Among all participants, 19 (8.2%) had sex with a commercial partner(s), and 57 (19.0%) had sex with casual partners in the last 12 months. The median number of sexual partner of all participants was zero with a range from 0 to 10. For those sexually active youth in the last 12 months, the median number of sexual partners were two with a range from 1 to 10. Among all participants, 38 (12.7%) had more than one partner in the last 12 months.

Among 170 male participants, 37 (21.8) reported ever having sex with a male, and 25 (14.7%) in the last 12 months. The median number of male partners was zero with a range of zero to six. About 3.5% young men had multiple male partners in the last 12 months.

Among all 300 youth, a high proportion reported having sex for money or gifts (8.7%), and having concurrent partners (11.7%).

About a third of participants reported ever use of a condom. A high proportion (55.0%) of youths reported having sex without use of a condom. Consequently, only one youth (n= 19; 5.3%) used a condom at last sex with a commercial partner, and eight (n=57;14%) used a condom at last sex with a casual partner. None of the youth reported consistently using a condom with commercial partner(s) in the last 12 months, and three (n= 57; 5.2%) reported consistently using condom with casual partner(s) in the last 12 months.

Eight (2.7%) participants were diagnosed with genital discharge or genital ulcer or sore in the last 12 months, including four with both, three with discharge only and one with ulcer only.

There was an association between gender and sexual behaviour. Compared to males, females were less likely to have had sex in the last 12 months (12.3% versus 37.6% chi square 24.2,  $p<0.01$ ) and less likely to have had sex with a casual partner (7.7% versus 27.6% chi square 19.1,  $p<0.001$ ).

## **HIV knowledge, belief and attitudes**

More than half of the youth participants had correct answers of HIV protection knowledge in terms of condom protection, faithful partner and abstinence from sex. A very low (20%) belief of HIV transmission was observed among youth, and only 12.7% had both correct HIV protection knowledge and belief of HIV transmission. About one fifth of youth indicated they would share meal with or buy food from an HIV positive person. There were 90 youth (30%) who thought that confidential testing of HIV was possible in their community. Only five participants (1.7%) had an HIV test and knew the result. There was an association between gender and HIV knowledge. Compared to males, females were less likely to have both correct knowledge of HIV/AIDS prevention methods (47.7% versus 63.5%, chi square 7.5,  $p<0.01$ ) and correct knowledge about HIV/AIDS transmission (13.8% versus 24.7%, chi square 5.4,  $p=0.02$ ).

## **Summary**

- Samoa is a country with a low prevalence of HIV infection. No HIV infection was identified among either the pregnant women or the STI clinic attendees participating in the prevalence surveys.
- Chlamydia is endemic among pregnant women, particularly young women and unmarried women. Strategies to address this should be developed at the country level.
- Condom use is extremely low, despite condoms being an effective strategy in prevention of HIV and STI transmission.
- The population remains highly vulnerable to HIV infection with biologic, behavioural and sexual indicators of risk. For example, youth participating in the behavioural surveillance survey reported a low level of condom use and a low level of knowledge of HIV/AIDS, especially among females. Few participants had both undergone a confidential HIV test and were aware of the result.

- Knowledge of HIV was good among pregnant women. The majority of women were aware that HIV could be transmitted from a mother to her unborn child and through breastfeeding.
- The HIV sero-surveillance survey has helped to establish a methodology for surveying groups at high risk of HIV infection. Considerations for future surveys include identification of high risk populations, sampling techniques and estimates of sample size which would be needed to reliably detect HIV prevalence in low prevalence settings.

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Survey Team Leaders - Ms Leuluaialii Perive Lelevaga, Mr Vaialia Iosua, Ms Kaisarina Poloa, Ms Lusi Aiolupo and Mr Alapati Anoia

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# 5. Solomon Islands

## Introduction

The Solomon Islands are comprised of six islands, spread over a land mass of 28 000 square kilometers. The population in 2005 was estimated to be 471 266.<sup>1</sup> The capital is Honiara. The Solomon Islands has an estimated annual population growth rate of 2.5%, the highest in the Pacific. The fertility rate was 4.05 children per woman (2003) and in 2003 there were 10 413 births. The life expectancy at birth was 63.6 years for males and 66.4 years for females.

In 2004 there were 314 clinics and 57 doctors, with one doctor per 7176 population. Around 70% of the total population live within 3 km of the nearest clinic<sup>2</sup>. The increasing population of the country is a major challenge to the health care services, in terms of coverage and equitable distribution of a limited health resource to meet the vast health demand of the people.

The Solomon Islands is classified by the United Nations as a least developed country. The main sources of the country's economy were severely compromised during the ethnic conflict that peaked between 1999 and 2003. Correspondingly, the real per capita GDP declined. However, by the end of 2003 the country's economy showed a positive recovery and many of the countries main sources of income such as fishing and the logging/timber industry have gradually returned to normal operation. In 2002 the GDP constant was SBD 586 (US\$77).<sup>3</sup>

Previous behavioural research and other reports have suggested high levels of unprotected sex among young people in the Solomon Islands and that many were exchanging sex for money or other resources. Other reports have indicated that young male and female youths in Honiara were going out to boats for money and food in exchange for sex, and that young women who worked in the fishing industry were exchanging sex for money and other resources with seafarers<sup>4</sup>. The complete epidemiological picture of HIV infection and transmission is however unclear in the Solomon Islands. In 2003 the GFATM funded six PICTs to conduct a series of prevalence surveys among selected population groups. This chapter details the findings of the surveys carried out in the Solomon Islands during 2004 to 2005.

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1 SI Population and Housing Census 1999

2 Ministry of Health (1996) Comprehensive Health Review

3 [www.spc.int/prism/economic/nataccts.html](http://www.spc.int/prism/economic/nataccts.html). Accessed October 2005

4 National HIV policy and multisectoral strategic plan 2005-2010



# Survey Personnel

## Local Team

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## Ethics Approval

The survey was approved by the National Health Research Ethics Committee at the Ministry of Health in the Solomon Islands and by the Human Research Ethics Committee, UNSW, Australia.

## Objectives

For the first round of SGS surveys, the objectives were as follows:

- strengthen HIV surveillance capacity in the Solomon Islands in conducting HIV/STI and behavioural surveys;
- provide baseline data on the HIV epidemic for future monitoring of HIV trends in selected population sub-groups;
- analyse demographic and behavioural factors in these groups;
- identify STI prevalence in asymptomatic pregnant women;
- provide information on the effectiveness of HIV prevention and control programmes;
- collect baseline data to systematically monitor trends in risk behaviours, knowledge and attitudes among young people in Honiara.

Infections to be detected in the surveys included:

- Human immunodeficiency virus (HIV);
- *Neisseria gonorrhoeae* (gonorrhoea);
- *Chlamydia trachomatis* (chlamydiosis); and
- Syphilis: as reflected by prevalence of treponemal seropositivity.

# The Strategic Plan for Response to STI, HIV and AIDS

## The Plan

The National HIV Policy and Multi-sectoral Strategic Plan 2005-2010 provides the policy direction framework and multi-sectoral strategies, which forms the basis of the operational plans of all stakeholders<sup>1</sup>. The formation of the Solomon Islands National AIDS Council, which had its inaugural meeting in 2004, is a boost to the policy and strategic plan.

The plan was endorsed in 2005 and will be reviewed after every five years. There were five priority areas identified in the plan, namely:

- Reduction of risk-behaviour and vulnerability to HIV and STIs.
- Enhance voluntary counselling and testing for HIV as an entry point for confidentiality, prevention and treatment for STIs and AIDS (including blood safety).
- Enhance HIV/ STIs surveillance, treatment and care.
- Enhance capacity building for the national HIV response at both the community, and institutional levels.
- Ensure sustainable development to enable an environment for behavioural change, de-stigmatization and prevent discrimination impacting prevention and care.

## The Country Co-ordinated Mechanism and members

The Country Coordinated Mechanism is a global fund requirement. The chair of the CCM committee is Dr George Malefoasi, Under Secretary of Health Improvement, Ministry of Health, Solomon Islands.

## HIV/AIDS and STI case-reports

### Surveillance Structure

- The case definition used for AIDS surveillance is based on WHO classification and reporting begun in 1988.
- All HIV testing is performed at the national referral laboratory in Honiara.
- HIV and AIDS cases are reported to the Disease Prevention and Control Unit, Ministry of Health on a monthly basis.
- Blood donors and visa applicants are routinely screened for HIV infection.

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<sup>1</sup> The National HIV Multi-sectoral and Strategic Plan 2005-Solomon Islands Ministry of Health

- Pregnant women are routinely screened for syphilis during antenatal care.
- There is no local capacity for chlamydia testing.

## Reported cases

A total of five HIV infections have been reported in the Solomon Islands as of the end of 2004 (Table 5.1). Four of the five cases were detected during the previous year. In 2004 there were four adults living with HIV, giving a prevalence for adults aged 15-49 years of 1.9 per 100 000.

The ages of adults with HIV range from 26 to 30 years. The main route of transmission is reported as sexual contact. The Ministry of Health cautions that the small number of reported cases likely reflects under reporting of cases, and variability in terms of access and capacity for HIV testing and diagnosis.

**Table 5.1: Distribution of cumulative reported HIV cases by sex and mode of transmission in Solomon Islands, 2004**

	Solomon Island	6 PICTs in SGS project*	All PICTs
<b>Sex</b>			
Male	2	152	5749
Female	3	103	5043
Unknown		0	420
<b>Mode of transmission</b>			
Homo/bisexual	-	18	-
IDU	-	1	-
Heterosexual	-	202	-
Blood products	-	1	-
Mother to infant	-	21	-
Other/unknown	-	12	-

Ref: Laboratory, Solomon Islands, National Referral Hospital.

\* Excluding reports from the Solomon Islands as mode of transmission data not available

# Second Generation HIV Surveillance Surveys

## Executive Summary: Solomon Islands

Summary of Millennium Development Goal 6: Combat HIV/AIDS, malaria and other diseases and UNGASS indicators for a concentrated/low-prevalence Epidemic

Indicator	Population	Per cent
Millennium Development Goal 6: Combat HIV/AIDS, Malaria and other diseases <sup>1</sup>		
18. HIV Prevalence among 15-24 year old pregnant women	Pregnant Women (n=241)	0
19a: Condom use at last high-risk sex <sup>2</sup>	Youth (n=374)	
- Commercial		41.9
- Non-commercial		45.1
19b. % of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS <sup>3</sup>	Youth (n=374)	41.7
UNGASS		
% of (most at risk populations) who <u>ever</u> received HIV testing in the who know the results <sup>4</sup>	Youth (n=374)	3.2
% of (most at risk populations) who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission <sup>3</sup>	Youth (n=374)	41.7
% of (most at risk populations) who are HIV infected	Pregnant Women from border areas (n=96)	0

1 The target relevant to this goal is "Have halted by 2015 and begun to reverse the spread of HIV/AIDS". This target comprises of a series of indicators, two of which are measurable for the Solomon Islands from the SGS surveys. 2 Participants were asked for condom use at last sex with non-commercial and commercial partners separately. Therefore this indicator is reported separately for non-commercial and commercial partners. 3 Data not collected on transmission through sharing a meal. Indicator constructed using the following collected questions: condom protection; faithful partner; mosquito bite; healthy looking person with HIV. 4 UNGASS indicator was HIV testing and know the result in the last 12 months. Data collected for this survey was 'ever' tested.

## A. STI Prevalence Survey among pregnant women

### Methodology

A sample of 241 pregnant women aged 15-44 years attending their first routine antenatal visit at four rural and urban clinics were consecutively recruited into the survey from January to April 2005. Participants completed a confidential questionnaire administered by trained interviewers to obtain demographic, behavioural and other information. All participants were provided with survey information in the form of leaflets or group information sessions prior to taking part. The questionnaires were translated by the survey team to Solomon Islands Pijin (Lingua franca).

Confidential linked testing for HIV and other selected STIs (syphilis, gonorrhoea, and chlamydia) was undertaken. A 10ml blood sample and urine specimen was collected from participants. Urine samples were collected and transferred daily to the National Laboratory, Honiara for storage. Frozen urine samples were shipped to the Molecular Microbiological Laboratory, Royal Women's Hospital, Melbourne for PCR testing to detect *C. trachomatis* and *N. gonorrhoeae*. The ROCHE COBAS Amplicor (Roche Diagnostics, Pleasanton, California, United States of America) PCR test

was used. All specimens that were positive for *N.gonorrhoeae* were confirmed by an alternate PCR assay (Tabrizi et al (2005)). Sera were tested for HIV and syphilis at National Laboratory Honiara. Samples were screened for HIV using the Serodia HIV test followed by the Abbott Determine HIV 1 / 2 test. Following the laboratory HIV testing algorithm, positive samples from the two consecutive tests were sent to the NRL, Australia for confirmation by Western Blot. Sera were tested for treponemal seroreactivity using the Venereal Diseases Research Laboratory test (VDRL) and confirmed for syphilis using Treponema Pallidum Particle Agglutination (TPPA) test.

## Summary of methods for SPS survey, Solomon Islands

Survey design	Confidential Linked Testing
Sample size	241
Sampling method	Consecutive
Site locations	Honiara-Naha clinic, Kukum clinic, Rove clinic, Mataniko clinic
Type of consent	Written
Administration of questionnaire	Interviewer administered with an average time taken to complete the interview 20-30 minutes
Data collection period	January-April 2005
Laboratory tests	HIV: Abbott Determine rapid HIV a-b test Syphilis: VDRL Gonorrhoea and Chlamydia: Urine PCR

## FHI Indicators

**Table 5.2: Selected indicators of STIs and sexual behaviour among 241 pregnant women in Solomon Islands, 2005**

Key indicators	<25 years (n=105)	≥ 25 years (n=136)	Total (n=241)
HIV prevalence (%)	0	0	0
Syphilis prevalence (%)	14.8%	6%	10.0%
Chlamydia prevalence (%)	7.3%	5.7%	6.4%
Gonorrhoea prevalence (%)	0	0.8%	0.5%
Any STI prevalence (%)	20.8%	11.4%	15.5%
Median age at first sex (years)	17	18	18
Proportion of reporting commercial sex in last 12 months (%)	0.9%	0	0.4%
Median number of sex partners in life	2	3	2
Proportion having no incorrect beliefs about mother to child transmission (%) <sup>1</sup>	34.3%	42.9%	39%

<sup>1</sup> based on knowledge of whether a pregnant woman infected with HIV/AIDS can transmit the virus to her unborn baby and whether a woman with HIV/AIDS can transmit the virus to her newborn child through breastfeeding

## Demographic characteristics

A total of 241 pregnant women from four antenatal clinics were recruited. Participants' ages ranged from 16-44 years (mean 25.6 years, standard deviation 5.3 years), with 44.8% (105) aged less than 25 years (Table 5.3). Approximately half (53%) of the women were married and currently living with their spouses. The median age at first marriage was 19 years

(range 11 to 26 years). The majority of women (60.2%) reported their occupation as home duties / not employed, while the occupations of the fathers of the babies were mainly company workers or farmers (Table 5.3).

**Table 5.3: Demographic characteristics of 241 pregnant women in Solomon Islands**

Characteristic	Number	Percentage
<b>Age group (years)</b>		
15-19	28	11.6
20-24	80	33.2
25-29	85	35.3
30-34	32	13.3
35-39	12	5.0
40-44	4	1.7
<b>Education</b>		
Never attended school	11	4.6
Primary school	111	46.1
Secondary school	84	34.9
Higher (uni/college)	35	14.5
Not stated		
<b>Ever married</b>		
Yes	73	30.3
No	165	68.5
Not stated	3	1.2
<b>Current living arrangement</b>		
Married, living with spouse	130	53.9
Not stated	111	46.1
<b>Occupation of baby's father</b>		
Unemployed	22	9.1
Government worker	36	14.9
Seafarer/Fisherman	7	2.9
Company worker	74	30.7
Student	17	7.1
Business	24	10.0
Transport worker	20	8.3
Farmer	37	15.4
Not stated	4	1.7

## Pregnancy characteristics

Among the 241 pregnant women, 66 (27.4%) were primiparous. The median gestation was 25 weeks with a range from 8-40 weeks. The number of women who reported using at least one contraceptive in the past year was 57. The most popular contraceptive was Depo Provera, followed by the rhythm method.

## Risk behaviours

Table 5.4 details selected behavioural characteristics by age category. The median age at first sex was 18 years and ranged from 11 to 28 years. The median number of sexual partners in lifetime was two with a range from 1 to 80. Over half (56.8%) of the women had multiple partners in the last 12 months. The median number of sexual partner in last 12 months was one and

ranged from 1 to 4. Few women reported having commercial sex (0.4%) or concurrent partners (5.8%) in the last 12 months. About a quarter (26.1%) of women had reported ever using a condom in life. There were 16 women who reported being diagnosed with an STI in the last 12 months.

**Table 5.4: Behavioural characteristics of 241 pregnant women by age in Solomon Islands**

Outcome	<25		≥ 25		Total	
	No.	%	No.	%	No.	%
Median age at first sex	17		18		18	
Age at first sex						
<18	52	48.1	43	32.3	95	39.4
≥ 18	50	46.3	70	52.6	120	49.8
Not stated	6	5.6	20	15.0	26	10.8
Number of sexual partners in life						
1	49	45.4	42	31.6	91	37.8
≥ 2	51	47.2	86	64.6	137	56.8
Not stated	8	7.4	5	3.8	13	5.4
Number of sexual partners in last 12 months						
1	85	78.7	110	82.7	195	80.9
≥ 2	7	6.5	9	6.8	16	6.6
Not stated	16	14.9	14	10.5	30	12.5
Sex for money or gift in last 12 months						
Yes	1	.9	0	0	1	0.4
No	104	96.3	132	99.2	236	97.9
Not stated	3	2.8	1	.8	4	1.7
Concurrent partner in last 12 months						
Yes	7	6.5	7	5.3	14	5.8
No	99	91.7	126	94.7	225	93.4
Not stated	2	1.9	0	0	2	8

Only 4 in 10 women (39.0%) knew that HIV can be transmitted from pregnant women to their unborn baby and through breast feeding. Even fewer (7.1%) women thought a person could get confidential HIV testing in their community.

## Prevalence of HIV and other sexually transmitted infections

HIV and syphilis laboratory results were available for all 241 pregnant women, 24 (10.0%) were confirmed for syphilis and no HIV infections were diagnosed. Among 219 women with viable urine specimen, 14 (6.4%) were diagnosed with chlamydia and one with gonorrhoea. The prevalence of any STI was 15.5% (34/219) (Table 5.5).

**Table 5.5: Prevalence of HIV and other STIs among pregnant women**

Sexually transmitted infection	Number tested	Number infected	Prevalence (%)	95% CI
Chlamydia	219	14	6.4	3.2-9.6
Gonorrhoea	219	1	0.4	0-1.2
Syphilis	241	24	10.0	6.8-15.1
HIV	241	0	0	
Any STI	219	34	15.5	10.7-20.3



Table 5.6 details chlamydia infection by demographic characteristics and sexual behaviour. A higher proportion of younger women and women with more than one sexual partner in the last 12 months had chlamydia infection than other women (8.9% versus 5.7% and 7.3% versus 5.7% respectively).

**Table 5.6: Prevalence of chlamydia by selected demographic and risk factors among 241 pregnant women, Solomon Islands**

	Total	Chlamydia	
		No.	%
<b>Age</b>			
<25	96	7	7.3
≥ 25	123	7	5.7
<b>Marriage</b>			
Yes	117	5	4.1
No	88	9	9.3
<b>Education</b>			
Never attended school	11	0	0
Primary school	103	1	1
Secondary school	72	9	12.5
Higher (uni/college)	33	4	12.1
<b>Age at first sex</b>			
<18	83	6	7.2
≥ 18	111	7	6.3
<b>Number of sexual partners in life</b>			
1	81	4	4.9
≥ 2	128	10	7.2
<b>Number of sexual partners in last 12 months</b>			
1	174	10	5.7
≥ 2	45	4	8.9
<b>Concurrent partner in last 12 months</b>			
Yes	12	1	8.3
No	205	13	6.3
<b>Ever used condom</b>			
Yes	55	6	10.9
No	156	8	5.1

## **B: HIV Surveillance Survey among pregnant women from border areas**

### **Methodology**

A sample of 100 pregnant women aged 15-44 years attending their first routine antenatal visit were consecutively recruited into the survey from January to April 2005. These women were recruited from border areas and considered to be a population at risk of HIV. Participants completed a confidential questionnaire administered by trained interviewers to obtain demographic, behavioural and other information. All participants were provided with survey information in the form of leaflets or group information sessions prior to taking part in the survey. The questionnaires were translated by the survey team to Solomon Pijin (Lingua franca).

In addition to the confidential linked testing for HIV, testing for syphilis, gonorrhoea and chlamydia was undertaken using the methodology described in the SPS section above.

## Summary of methods for HSS, Solomon Islands

Survey design	Confidential Linked Testing
Sample size	100
Sampling method	Consecutive
Site locations	Western Province-Gizo Hospital, Helena Goldie Hospital, Noro Clinic
Type of consent	Written
Administration of questionnaire	Interviewer administrated. Average time taken to complete was 20-30 minutes
Data collection period	January-April 2005
Laboratory tests	HIV: Abbott Determine rapid HIV a-b test Syphilis: VDRL Gonorrhoea and Chlamydia: Urine PCR

## FHI Indicators

**Table 5.7: Selected indicators of HIV and sexual behaviour among 96 pregnant women resident in border areas in Solomon Islands, 2005**

Key indicators	N=96
HIV prevalence (%)	0
Median age at first sex (years)	17
Proportion having sex with more than one partner in the last 12 months (%)	10.4%
Median number of sex partners in the last 12 months	1
Proportion reporting commercial sex in the last 12 months (%)	1%

## Demographic characteristics

A total of 96 of the 100 participants recruited into the survey satisfied the inclusion criteria. Participants' ages ranged from 15-42 years (mean 25.7 years, standard deviation 5.6 years), with 46.1% (45) under 25 years of age. Around half (51%) of the participants were not married and not living with a sexual partner. Of participants, 44% had attended secondary school or higher and 42% reported being away from home for more than one month in last year. Few (1%) had consumed alcohol at least once in the last month. No participants reported injecting drug use in the last 12 months.

## Sexual behaviour

The median age at first sex was 17 years and ranged from 13 to 26 years. One (1.0%) participant reported having had sex with commercial partner(s) in the last 12 months. The median number of sexual partners of all participants was four with a range from 1 to 30. Among all participants, 10 (10.4%) had more than one partner in last 12 months. There were three (3.2%) participants diagnosed with an STD in the last 12 months including unspecified bacterial infection and gonorrhoea.

## Prevalence of HIV

There was no HIV detected among pregnant women participating in the survey.

## Limitations of the Survey

The HIV Sero-surveillance Survey was carried out as a pilot survey to establish a methodology for surveying groups at higher risk of HIV infection. While results present an interesting profile of pregnant women, only a limited number of participants were surveyed and results should be interpreted accordingly. In particular, caution should be used in interpretation of the HIV prevalence results. Consideration of the necessary sample sizes required to reliably detect HIV prevalence in low prevalence settings should be given to future surveys.

## C: Behavioural Surveillance Survey among Youth

A behavioural prevalence survey of risk behaviours related to HIV and/or STI infection in 600 unmarried youth aged 14-29 years was determined between November 2004 and February 2005. Regional survey inclusion criteria limited the number reported in this report to 374 in-school youth. Participants were consecutively recruited and completed a confidential questionnaire administered by trained interviewers. The questionnaire included standardized questions on behavioural risk factors and attitudes towards HIV/AIDS. Participation in the survey was voluntary and informed consent was obtained from all eligible participants prior to data and sample collection. The questionnaires were translated by the survey team to Solomon Pijin (Lingua franca).

### Summary of Methods for BSS, Solomon Islands

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Population	Youth (age 14-29 years, unmarried)
Sample size	600 (Analyses restricted to 374 in-school youth)
Sampling method	Consecutive
Site locations	Schools in Honiara City. The 89 gathering sites were grouped into 10 survey sites. These were places where young gather and socialized around chewing, exchanging and selling betel-nut, drinking alcohol, and tobacco and drug smoking
Type of consent	Written
Administration of questionnaire	Interviewer administered. Average time taken to complete an interview was 15-30 minutes
Data collection period	November 2004 – February 2005

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## FHI Indicators

**Table 5.8: Selected behavioural indicators for 374 Youth, Solomon Islands**

Indicator	N=374
Median age at first sex by gender (years)	
Total	16
Male	16
Female	16
Proportion of youth sexually active in the last 12 months	50.5%
Youth using condom at first sex	14.6%
Proportion of youth with multiple partners in the last 12 months	21.9%
Median number of sex partners in the last 12 months	0 (2 if sexually active)
Proportion of youth using condoms at last sex with non-commercial partners	45.1%
Consistent condom use with non-commercial partners in last 12 months	7.6%
Proportion of young men reporting commercial sex in last 12 months	9.5%
Median number of commercial partners in last 12 months among young men	0 (2 if had commercial partner)
Proportion of young men using condoms at last commercial sex	41.9%
Consistent condom use of young men with commercial partners in last 12 months.	7.3%
Proportion of young men reporting sex with men in the last year	0.7%
Proportion who have ever received HIV testing and know the result	3.2%
Proportion reporting correct knowledge of HIV/AIDS prevention methods <sup>1</sup>	58.0%
Proportion reporting no incorrect beliefs about HIV/AIDS transmission <sup>2</sup>	55.6%
Proportion who both report correct knowledge of HIV/AIDS prevention and no incorrect beliefs about HIV/AIDS transmission	39.3%
Proportion reporting accepting attitudes towards those living with HIV <sup>3</sup>	28.3%

1 Respondents who can correctly identify consistent condom use, mutual monogamy between partners and abstaining from sex as methods to reduce risk of HIV transmission

2 Respondents who know a person cannot get HIV from a mosquito bite and that a healthy looking person can be infected with HIV

3 Respondents who would be willing to share a meal with a person with HIV/AIDS and be willing to buy food from a shopkeeper who had HIV and would not want it to remain a secret if a family member had HIV infection.

## Demographic characteristics

A total of 600 youth including 300 males and 300 females were recruited from 12 survey sites. Of those, 374 participants satisfied the inclusion criteria of age, marital/relationship and living situation. The exclusion criteria were still at school, ever married or outside age range of 15-24 years. Participants' ages ranged from 15-24 years (mean 20.0 years, standard deviation 2.5 years), with 41.2% (154) under 20 years of age (Table 5.9). The majority of participants' (70.9%) highest level of education was secondary school with 17.1% having only primary school education. The majority (65.8%) of the participants were currently living with their family or relatives, and 41% reported being away from home for more than one month in the last year. The majority youth were Malaitan, the most common ethnicity, and 13.6% with mixed ethnicity.

**Table 5.9: Demographic characteristics of 374 youth, Solomon Islands**

Characteristic	Number	Percentage
<b>Age group (years)</b>		
15-19	154	41.2
20-24	220	58.8
<b>Gender</b>		
Male	190	50.8
Female	184	49.2
<b>Education</b>		
No school	33	8.8
Primary school	64	17.1
Secondary school	265	70.9
Higher (university/college)	12	3.2
<b>Current living status</b>		
Alone	3	.8
With family/relatives	246	65.8
With wantoks	106	28.5
With peers/friends	15	4.0
With co-worker/students	4	1.1
<b>Away from home for more than 30 days in last 12 months</b>		
Yes	153	41.0
No	218	58.3
Not stated	2	0.7

## Substance behaviours

Nearly half (43.9%) of participants had consumed alcohol at least once in the last four weeks. However, of those who drank alcohol almost two thirds (65.1%) were male. Among all 374 participants, 76.5% reported they had used any drugs in their lifetime, the most popular drug was tobacco, followed by marijuana. One (0.3%) participant had injected drugs in the last 12 months.

## Sexual behaviours

Over three quarters (78.6%) of youths had ever had sex and half (50.5%) had sex in the last 12 months. The median age at first sex was 16 years and ranged from 11 to 25 years. Among all participants, 76 (20.3%) reported ever having sex with commercial partner(s). The median number of sexual partners of all participants was zero with a range from 0 to 28. For those sexually active in last 12 months, the median number of sexual partners was two with a range from 1 to 28. Among all participants, 85 (21.9%) had more than one partner in the last 12 months.

Among 190 male participants, two (1.1%) reported ever having sex with a male partner, and one (0.7%) in the last 12 months. Among all 374 youths, a high proportion reported having sex for money or gifts (20.3%).

A low proportion (16.3%) of participants reported ever using a condom in the last 12 months. A high proportion (69.6%) of those having sex in the last 12 months did not always use a condom. Consequently, only 41.9% used a condom at last sex with commercial partners.

Few (7.3%) youths reported consistently using a condom with commercial partners in the last 12 months, and 11 of 152 (7.6%) reported consistently using condom with non-commercial partner in the last 12 months.

There were 39 (10.4%) participants diagnosed with genital discharge or genital ulcer/sore in the last 12 months, including 13 with both, 15 with discharge only and 11 with ulcer only.

## **HIV Knowledge, belief and attitudes**

Over half the youths had correct answers of HIV protection knowledge in terms of condom protection, faithful partner and abstinence from sex (58.0%) or correct beliefs of HIV transmission (55.6%). Only 39.3% had both correct HIV protection knowledge and belief of HIV transmission. A high proportion of youth demonstrated accepting attitudes towards PLWHA. Only 28.3% of youth would share a meal with or buy food from HIV positive persons. There were 187 youth (47.6%) who thought that a HIV confidential test was possible in their community. Only 13 participants (3.2%) have had an HIV test and knew the result.

## **Summary**

- The Solomon Islands is a country with a low prevalence of HIV infection. No HIV was identified in the surveys.
- Chlamydia and syphilis are endemic among pregnant women. Strategies to address this should be developed at the country level.
- The population remains highly vulnerable to HIV infection with biologic, behavioural and sexual indicators of risk. For example, youth participating in the behavioural surveillance survey reported low and inconsistent use of condoms and few have had an HIV test and were aware of the result.
- The HIV sero-surveillance survey has helped to establish a methodology for surveying groups at high risk of HIV infection. Considerations for future surveys include identification of high risk populations, sampling techniques and estimates of sample size which would be needed to reliably detect HIV prevalence in low prevalence settings.

# 6. Tonga

## Introduction

Tonga is a small developing island nation in the lower middle income group of countries. The population is 101 800<sup>1</sup> with 38% aged less than 15 years and a crude birth rate of 24 per 1000 population. Tonga's annual population increase of 0.3% reflects the high migration rate and the large number of Tongans residing overseas. About 70% of the total population reside on the main island of Tongatapu where access to health care services is much better than the rest of the country. Life expectancy for Tongan males and females is 70 years and 72 years respectively. Infant mortality rate is 14.6 per 1000 live births, the fertility rate is 3.8 children per woman and the teenage pregnancy rate is 3.1<sup>2</sup>.

The estimated GDP constant per capita was TOP 2966 (US\$1460) in 2004<sup>3</sup>. Tonga's economy is based on agriculture, tourism and fishing. Many families depend on subsistence farming and remittances from family members and relatives residing overseas. Health care for all Tongans is free and government health expenditure is US\$70 per capita<sup>4</sup>. There is a total of 41 medical officers with a doctor/population ratio of 1/2483. There are 20 health officers, 316 nurses and midwives and about 10 village health workers. The central hospital is located on the main island of Tongatapu with three district hospitals serving the outer islands, 14 health centres, 36 Maternal and Child Health clinics, 12 general practitioners and two church-based clinics.

There were 2710 births in 2004 and the majority (95.5%) of women delivered in hospitals. All pregnant women had at least one antenatal visit. Antenatal care is provided at all the hospitals, health centres and Maternal and Child Health clinics. Most pregnant mothers usually present for booking during the second trimester and the routine tests include serum haemoglobin level, blood group and presence of sugar in the urine.

HIV prevalence in Tonga is very low. Serologic HIV surveillance is good with many HIV tests being carried out as part of screening programmes for population groups including blood donors and government workers. Risk behaviour surveillance and testing of sub-populations vulnerable to HIV is weaker. In 2003 the GFATM funded six PICTs to conduct a series of prevalence surveys among selected population groups. This chapter details the findings of the STI Prevalence Survey among pregnant women carried out in Tonga in 2005.

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1 Ministry of Health Annual Report 2004.

2 Ministry of Health Annual Report 2004.

3 [www.spc.int/prism/economic/nataccts.html](http://www.spc.int/prism/economic/nataccts.html). Accessed October 2005

4 National Health Account 2004

## Survey Personnel

### Local team

Name	Affiliation	Role
Dr Seini Kupu	Senior Medical Officer i/c Communicable Diseases (SMOCD) Section	Principal investigator
Dr Reynold 'Ofanoa	Medical Officer special grade i/c Environmental Section (former acting SMOCD)	Acting principal investigator, now Assistant principal investigator; assisted with training of interviewers
Senior Midwife Lesieli Halai	Charge nurse, ANC	Provide group counselling; monitor incoming ANC survey recruits and arranging appointments
Senior Midwife Makelesi Pole	Acting Charge nurse, ANC	As above
Midwife Mafi 'Ealelei	Mid-wife, Obs. & Gynae Ward	Interviewer
Senior Midwife Taina Palaki	Mid-wife, ANC	Interviewer
Midwife Vika Finau*	STI staff nurse, Tonga Family Health Association	Interviewer
Senior Midwife 'Iunisi Uhi	Senior Mid-wife, Nurse graduate, Public Health	Interviewer
Staff Nurse Lesieli 'Uluheua	Mid-wife, ANC	Interviewer
Mr Saia Penitani	Senior Public Health Assistant	Registration and consent forms
Ms Naomi Fakauka	Health Promotion	Interviewer
Ms Telesia Talia'uli	Medical science technologist	Blood specimen collection
Mr Taukei Halauafu	Assistant medical science technologist	Blood specimen collection
Ms Nukonuka Mafile'o	Public Health Assistant	Registration and consent form signing. Interviewer (occasional)
Ms Meleane Kava	Health Promotion assistant	Escort participants to interview room/lab
Ms Lesieli Vanisi	Health Promotion assistant	Escort participants to interview room/lab
Dr Semisi Latu	Senior Medical Officer i/c Obstetric & Gynaecology Ward	Assist with training; Review status of pregnancy, further clarify survey issues.
Dr 'Aivi Puloka*	Senior Medical Officer, Obstetric and Gynaecology	Assist with questionnaire review; interviewers training; review status of pregnant women; further clarify survey issues.
Dr Niklas Danielsson	WHO Country Liaison Officer, Tonga	Adaptation of questionnaire, pre-test, quality control,

\* Staffs that were involved in preparatory phase [2004] but no longer actively participating in implementing of survey tools.



## Regional Team

Name	Affiliation	Role
Dr Susan Cliffe	University of New South Wales	Epidemiologist
Ms Jishan Dean	University of New South Wales	Computer Systems Analyst
Professor Lisa Maher	University of New South Wales	Co-Investigator
Mr Bill Parr	Secretariat of the Pacific Community	GFATM Manager
Dr Sopheap Seng	Office of the WHO Representative for the South Pacific	HIV/AIDS/STI Focal Point
Mr Tim Sladden	Secretariat of the Pacific Community	HIV/AIDS & STI Surveillance Specialist
Dr Elizabeth Sullivan	University of New South Wales	Principal Investigator, Australia
Dr Nguyen Thi Thanh Thuy	World Health Organization, Western Pacific Regional Office	Technical Adviser on HIV/STI Epidemiology, Surveillance, Monitoring and Evaluation
Dr Sepehr Tabrizi	Royal Women's Hospital Melbourne	Senior Laboratory Scientist
Dr Yueping Alex Wang	University of New South Wales	Epidemiologist

## Funding Arrangements

The survey was supported by the Ministry of Health Tonga, WHO Western Pacific Regional Office, Secretariat of the Pacific Community and the University of New South Wales, through funding principally provided by the Global Fund to Fight AIDS, Tuberculosis and Malaria.

## Ethics Approval

The survey was approved by the Medical Research Ethics Committee in Tonga and the Human Research Ethics Committee, UNSW, Australia.

## Objectives

For the first round of SGS surveys, the objectives were as follows:

- strengthen HIV surveillance capacity in Tonga in conducting HIV/STI and behavioural surveys;
- provide baseline data on the HIV epidemic for future monitoring of HIV trends in selected population sub-groups;
- establish the prevalence of hepatitis B in these sub-groups;
- analyse demographic and behavioural factors in these groups;
- identify STI prevalence in asymptomatic pregnant women;
- provide information on the effectiveness of HIV prevention and control programmes.

Infections to be detected in the surveys included:

- Human immunodeficiency virus (HIV);

- *Neisseria gonorrhoeae* (gonorrhoea);
- *Chlamydia trachomatis* (chlamydiosis); and
- Syphilis: as reflected by prevalence of treponemal seropositivity.

## **The Strategic Plan for Response to STI, HIV and AIDS**

### **The Plan**

The National Strategic Plan for the response to STI, HIV and AIDS for Tonga was developed through a process of national situational analysis that identified the guiding principles. The plan was presented to a multi-sectoral workshop of 30 participants who identified priority areas, goals and objectives with strategies and activities. The Document was launched in 2001 with a life span from 2001-2005. It is due for review before end of the 2005.

There were five priority areas identified in the 2001-2005 Strategic Plan, namely:

- reduce incidence of curable STIs
- reduce vulnerability of special sub-groups
- ensure a safe blood supply
- human rights and care and support for PLWHA
- establish a multisectoral coordinated framework for monitoring and evaluation

### **The Country Coordinated Mechanism and members**

The National Country Coordinated Mechanism was established as part of a requirement of the Global Fund project. It is chaired by the Minister of Health and co-chaired by a member of the Royal household as a representative from civil society who is also the President of Leuleumafana AIDS Foundation, and the Tonga Red Cross. The CCM secretary is Director of the Tonga National Youth Congress and the rest of the members are from 15 other government ministries and organizations, such as the Ministry of Education, Department of Justice, Department of Planning and Member of Parliament, non-government and community-based Organizations and BOs like Tonga Family Health, Tonga Red Cross, Tonga National Youth Congress, Media Association, Methodist Church, Catholic Women's league and Salvation Army.

## **HIV/AIDS and STI case reports**

### **Surveillance Structure**

- The case definition used for AIDS surveillance is based on WHO's classification and reporting begun in 1987
- HIV and AIDS cases are notifiable to the Ministry of Health and the total number of new cases is reported at the end of the year in the Minister of Health's Annual Report.
- Data collected include age, sex, mode of transmission and reason for HIV testing

- Blood donors, visa applicants<sup>1</sup>, new government employees, and immigrants seeking job renewal visas are routinely screened for HIV, syphilis and hepatitis B. STI patients are offered HIV testing on a voluntary basis. In 2004, there were a total of 2800 HIV tests performed.
- Other notifiable STIs are gonorrhoea and syphilis. Chlamydia is not a notifiable infection and testing is not available locally.
- There is no routine antenatal screening of any STIs, including HIV infection

## Reported cases

A total of 14 HIV infections have been reported by year end of 2004 (Table 6.1). In 2004 there were two persons living with HIV and the prevalence for adults aged 15-49 years was 0.4 per 100 000. The main mode of transmission among males was men having sex with men, while most women were infected by heterosexual transmission. Transmission occurred in Tonga in four instances and the remaining 10 individuals were infected through sexual contacts abroad.

Reporting on STIs is limited by the lack of laboratory and public-health information capacity. It is widely thought that many patients with symptoms of STIs are treated by the private sector and do not appear in the incidence reports. Contact tracing is weak and an overwhelming proportion (>90%) of the patients treated for gonorrhoea in the public health service are men. The number of laboratory confirmed gonorrhoea infections and HIV tests for Sexually Transmitted Infections has risen between 2002 to 2004, suggesting that the number of STI cases in Tonga is increasing.

**Table 6.1a: Distribution of cumulative reported HIV cases by sex and mode of transmission in Tonga, end of 2004**

	Tonga	6 PICTs in SGS project*	All PICTs
Sex			
Male	8	152	5749
Female	6	103	5043
Not Stated	0	0	420
Mode of transmission			
Homo/bisexual	8	18	-
IDU	0	1	-
Heterosexual	5	202	-
Blood products	0	1	-
Mother to infant	0	21	-
Other/unknown	1	12	-

Source: Communicable Disease Section, Ministry of Health, Tonga.

\* Excluding reports from the Solomon Islands as data on mode of transmission unavailable.

In Tonga, reported cases of gonorrhoea has increased from 46 in 2000 to 108 in 2004 (Table 6.1b). In 2004 there was one reported cases of syphilis. Reporting of STIs is limited by the lack of laboratory and public-health information capacity.

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<sup>1</sup> Visa applicants include both visas to Tonga and to New Zealand, Australia and USA and is limited to longer term visas

**Table 6.1b: Reported number of STI cases in Tonga, 2000-2004**

	2000	2001	2002	2003	2004
Syphilis **	0	0	0	0	1
Gonorrhoea	46	52	44	51	108

Source: Laboratory records; and Communicable Disease Section, Ministry of Health and Family Health.

\*\* Syphilis tests by RPR are performed on all bloods for blood donations. Reactive specimen were confirmed using TPHA testing.

TPHA test used to be available locally through JICA but that assistance is no longer available, thus there is now a need to look elsewhere, e.g. New Zealand, for confirmation of a reactive RPR.

## Second Generation HIV Surveillance Surveys

### Executive Summary: Tonga

Summary of Millennium Development Goal 6: Combat HIV/AIDS, malaria and other diseases and UNGASS indicators for a concentrated/low-prevalence Epidemic

Indicator	Population	Percentage
Millennium Development Goal 6: Combat HIV/AIDS, Malaria and other diseases <sup>1</sup>		
18. HIV Prevalence among 15-24 year old pregnant women	Pregnant Women (n=348)	0%
19a: Condom use at last high-risk sex	-	-
- Commercial		
- Non-commercial		
19b. % of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS	-	-
UNGASS		
% of (most at risk populations) who <u>ever</u> received HIV testing in the who know the results	-	-
% of (most at risk populations) who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission	-	-
% of (most at risk populations) who are HIV infected	-	-

<sup>1</sup> The target relevant to this goal is "Have halted by 2015 and begun to reverse the spread of HIV/AIDS". This target comprises of a series of indicators, two of which are measurable for Tonga from the SGS surveys. Further details on methodology is provided in chapter 1.

## A: STI Prevalence Survey among pregnant women

### Methodology

A sample of 348 pregnant women aged 17-49 years attending their first routine antenatal visit at the central Vaiola Hospital, Tongatapu were consecutively recruited into the survey from February 2005 to May 2005. Participants completed a confidential questionnaire administered by trained interviewers to obtain demographic, behavioural and other information. All participants were provided with survey information in the form of leaflets and group information sessions prior to taking part in the survey. Modifications to the standard questionnaire included questions on total number of life partners and access to condoms and family planning. The questionnaire was translated into Tongan.

Linked anonymous testing for HIV and other selected STIs (syphilis, gonorrhoea, chlamydia and hepatitis B) was undertaken. A 10ml blood sample and first catch urine specimen was collected from participants. Urine samples were collected and transferred daily to the local laboratory for storage. Frozen urine was shipped to Royal Women's Hospital, Melbourne for testing using PCR for *C. Trachomatic* and *N. gonorrhoeae*. Sera were tested at Vaiola Hospital Public Health Central Laboratory using Abbott Deterime TP test kit for treponemal seroreactivity and Serodia test for HIV infection. Confirmation of all reactive tests was undertaken at South Western Sydney Area Pathology Service, Sydney, Australia for syphilis and HIV infection.

## Summary of methods of SPS Survey, Tonga

Survey design	Linked anonymous testing
Sample size	348 (322 Urine samples)
Sampling method	Consecutive
Site locations	Central Hospital, Tongatapu
Type of consent	Written
Administration of questionnaire	Interviewer administered with an average time taken for completion was 20-30 minutes
Data collection period	February to May 2005
Laboratory tests	HIV: Abbott Determine rapid HIV a-b test HBV: Abbott Determine HBSA-g test Syphilis: RPR Chlamydia and GC: Urine PCR

## FHI indicators

**Table 6.2: Selected indicators of STIs and sexual behaviour among 348 pregnant women, Tonga 2005**

	<25 years (n=110)	≥25 years (n=238)	Total (n=348)
HIV prevalence (%)	0	0	0
Syphilis prevalence (%)	5.5	2.1	3.2
Chlamydia prevalence (%)	27.5	8.3	14.5
Gonorrhoea prevalence (%)	4.9	1.4	2.5
Any STI prevalence (%)	31.4	11.2	17.7
Median age at first sex (years)			21 (14-35)
Proportion of reporting commercial sex in last 12 months (%)			1.7
Median number of sex partners in life			1 (1-12)
Proportion having no incorrect beliefs about mother to child transmission (%) <sup>1</sup>			70.7

<sup>1</sup> based on knowledge of whether a pregnant woman infected with HIV/AIDS can transmit the virus to her unborn baby and whether a woman with HIV/AIDS can transmit the virus to her newborn child through breastfeeding

## **Demographic Characteristics**

All eligible participants agreed to take part in the survey. A total of 348 pregnant women from Tonga were recruited. Participants' ages ranged from 16-44 years (mean 28.2 years, standard deviation 5.9 years), with 31.6% (110) under 25 years of age (Table 6.3). Over two thirds of women were married and currently living with their spouses. The median age at first marriage was 21 (range 15-35 years). The majority of women (75.3%) reported home duties as their occupation, while the occupation of the baby's father varied among farmer, company worker, government-worker or other (Table 6.3).

## **Pregnancy characteristics**

Among the 348 pregnant women, 67 (19.3%) were primiparous. The median gestation was 16 weeks (range 4-33). Ninety four women (27.1%) reported using at least one type of contraceptive in the past year. The most popular contraceptive was withdrawal, followed by Depo-Provera or injectables, birth control pills, male condom and safe period.

## **Risk behaviours**

High risk behaviours were reported among pregnant women in the survey and Table 6.4 details selected behavioural characteristics by age category. The median age at first sex was 21 years and ranged from 14 to 35 years. There were 79 (22.7%) women who reported ever having multiple sexual partners, 61 (17.8%) had two sexual partners in life and 18 (5.2%) had three or more. The median number of lifetime sexual partners was one (range 1-12). Few women reported having had commercial sex (1.7%).

Condom use among women was low with just 13.8% (48) of women reporting ever having used a condom. Six women reported having previously been diagnosed with an STI, two of which occurred in the previous 12 months.

**Table 6.3: Demographic characteristics of 348 pregnant women in Tonga**

Characteristic	Number	Percentage
<b>Age group (years)</b>		
15-19	17	4.9
20-24	93	26.7
25-29	96	27.6
30-34	91	26.1
35-39	35	10.1
40-44	16	4.6
<b>Residence</b>		
Tongatapu	96	27.6
Rural village	251	72.1
Not stated	1	0.3
<b>Education</b>		
Primary school	6	1.7
Secondary school	298	85.6
Higher (university or college)	42	12.1
Not stated	2	0.6
<b>Ever married</b>		
Yes	294	84.5
No	51	14.6
Not stated	3	0.9
<b>Current living arrangement</b>		
Married, living with spouse	292	83.9
Married, living with other sexual partner	12	3.4
Married, not living with spouse or other partner	3	0.9
Not married, living with sexual partner	18	5.2
Not married, not living with sexual partner	20	5.7
Not stated	3	0.9
<b>Occupation of baby's father</b>		
Farmer	114	32.8
Company worker	80	23.0
Government worker	28	8.0
Business	24	6.9
Police/Military	14	4.0
Seafarer/Fisherman	9	2.6
Other	73	21.0
Not stated	6	1.7

**Table 6.4: Behavioural characteristics of 348 pregnant women by age in Tonga**

Outcome	<25		≥25		Total	
	No.	%	No.	%	No.	%
Median age at first sex	19		22		21	
Age at first sex						
<18	29	26.4	14	5.9	43	12.3
≥18	81	73.6	223	93.7	304	87.4
Not stated	0	0	1	0.4	1	0.3
Number of sexual partners in life						
1	85	77.3	180	75.6	265	76.1
≥2	25	22.7	54	22.7	79	22.7
Not stated	0	0	4	1.7	4	1.2
Sex for money or gift in last 12 months						
Yes	0		6	2.5	6	1.7
No	110	100.0	228	95.8	338	97.1
Not stated	0		4	1.7	4	1.2

The majority of women (70.7%) were aware that HIV can be transmitted from a mother to her unborn baby and through breast feeding. Only 18.1% of women thought a person could get confidential HIV testing in their community.

## Prevalence of HIV and other Sexually Transmitted Infections

Among the 348 women tested for HIV and syphilis, none were diagnosed with HIV and 11 (3.2%) were reactive on the initial screening test to syphilis. These samples await confirmation. In addition, 348 women were tested for hepatitis B infection, of which 42 (19.6%) were found to be positive.

Among the 318 women with a viable urine specimen, 46 (14.5%) were diagnosed with chlamydia and eight (2.5%) with gonorrhoea (Table 6.5).

Among the 317 women who had both urine and blood testing, 56 (17.7%) had at least one infection, seven had two infections and one had three infections.

**Table 6.5. Prevalence of HIV and other STIs among pregnant women, Tonga**

Sexually transmitted infection	Number tested	Number infected	Prevalence (%)	95% CI
Chlamydia	318	46	14.5	10.6-18.3
Gonorrhoea	318	8	2.5	0.8-4.2
Syphilis	348	11	3.2	1.3-5.0
HIV	347	0	0	-
Hepatitis B	348	42	19.6	9.2-30.1
Any STI (excl. HBV)	317	56	17.7	13.5-21.9



An association was observed between chlamydia infection and age, marital status, and age at first sex (Table 6.6). Women aged less under 25 years were more likely to be infected than older women (27.5% versus 8.3%, chi square 20.5  $p<0.01$ ) while married women were less likely to be infected than unmarried women (11.6% versus 36.8% chi square 17.1  $p<0.01$ ). Women who's age at first sex was less than 18 were more likely to be infected than other women (27.5% versus 12.6%, chi square 6.2,  $p=0.01$ ).

**Table 6.6: Prevalence of chlamydia by selected demographic and risk factors among 348 pregnant women, Tonga**

	Total no. of women	Chlamydia	
		No. infections	Prevalence (%)
<b>Age</b>			
<25	102	28	27.5
≥25	216	18	8.3
<b>Marriage</b>			
Yes	277	32	11.6
No	38	14	36.8
<b>Education</b>			
Primary school	6	1	16.7
Secondary school	272	38	14.0
Higher (uni/college)	38	6	15.8
<b>Current living area</b>			
Capital city	89	23	25.8
Rural village	228	23	10.1
<b>Age at first sex</b>			
<18	40	11	27.5
≥18	277	35	12.6
<b>Number of sexual partners in life</b>			
1	243	30	12.3
≥2	71	15	21.1
<b>Sex for money/gift in last 12 months</b>			
Yes	4	0	
No	310	46	14.8
<b>Ever used condom</b>			
Yes	45	5	11.1
No	265	40	15.1

## Summary

- Tonga is a country with a low prevalence of HIV infection. No HIV infection was identified among the pregnant women participating in the prevalence surveys.
- Chlamydia and hepatitis B are endemic among pregnant women. Strategies to address this should be developed at the country level.
- The population remains highly vulnerable to HIV infection with biologic, behavioural and sexual indicators or risk. For example, few pregnant women participating in the survey reporting ever having used a condom.
- Few participants thought it possible for someone to get a confidential HIV test in their community

## **Acknowledgements**

On behalf of the Ministry of Health, Tonga, we would like to express our sincere gratitude and appreciation to the pregnant mothers who were willing to participate in the survey. Their participation in this study provides valuable insights for recommendations to improve service-provision in this area.

We would like to acknowledge the kind assistance of Global Fund to Fight AIDS, Tuberculosis and Malaria through which Tonga obtains quality baseline information on STI prevalence among antenatal women. Again, this would not be possible if not for the technical assistance from WHO through the UNSW team led by Dr Elizabeth Sullivan.

A very warm appreciation and congratulations to all members of the survey team including the CLO, Tonga, who persevered, despite all odds, to complete this study.

# 7. Vanuatu

## Introduction

The Republic of Vanuatu had an estimated population in 2003 of 210 200, spread across more than 83 islands with the majority of the population living in settlements of less than 200 people. The estimated annual population growth is high and was 2.2% in 2003. Young people are particularly vulnerable to HIV infection and in Vanuatu approximately 48% and 19% respectively are in the age group of 15 to 49 and 15 to 25 years. Vanuatu has a high fertility rate (4.3 children per woman in 2003) and a crude birth rate of 33 per 1000 population. In 2003 there were approximately 4000 live births and almost all (90%) pregnant women received some form of antenatal care. Life expectancy at birth is 70 years for females and 67 years for males.

There are five main hospitals in Vanuatu with a number of health centres (26), dispensaries (104) and Aid-posts (188) where awareness programmes at community level are provided. Vanuatu is classified as a developing country with a GDP constant per capita of VUV 78065 (US\$666) in 2003<sup>1</sup>. The tourist industry is large and accounts for about 40% of GDP. The economic production in Vanuatu was marginally lower (by 0.5 percent) in 2001 and is expected to show another marginal fall (above 0.4 percent) in 2002.

The epidemiology of STIs in Vanuatu is poorly defined. A cross-sectional survey among antenatal clinic attenders was conducted in 1999/2000 which found high levels of STIs, particularly chlamydia and trichomonas (23, 24) A paper examining the evidence on STI prevalence rates, monitoring, and surveillance system weaknesses highlighted the importance of STIs and HIV/AIDS in Vanuatu and recommended the scaling up of awareness programmes for young people, particularly girls, and the development of surveillance systems (25). In 2003 the GFATM funded six PICTs to conduct a series of prevalence surveys among selected population groups. This chapter details the findings of the surveys carried out in Vanuatu during 2005.

## Survey Personnel

### Local Team

Name	Affiliation	Role
Ms Marina Laklotal	Ministry of Health, Vanuatu	National STI/HIV/AIDS Coordinator
Mr Timothy Phatu	Ministry of Health, Vanuatu	Senior Laboratory Officer
Dr George Taleo	Ministry of Health, Vanuatu	Acting Director of Public Health
Dr Ros Seyha	WHO Country Liaison Office, Vanuatu	Technical Advisor

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<sup>1</sup> [www.spc.int/prism/economic/nataccts.html](http://www.spc.int/prism/economic/nataccts.html). Accessed October 2005

## Regional Team

Name	Affiliation	Role
Dr Susan Cliffe	University of New South Wales	Epidemiologist
Ms Jishan Dean	University of New South Wales	Computer Systems Analyst
Professor Lisa Maher	University of New South Wales	Co-Investigator
Mr Bill Parr	Secretariat of the Pacific Community	GFATM Manager
Dr Sopheap Seng	Office of the WHO Representative for the South Pacific	HIV/AIDS/STI Focal Point
Mr Tim Sladden	Secretariat of the Pacific Community	HIV/AIDS & STI Surveillance Specialist
Dr Elizabeth Sullivan	University of New South Wales	Principal Investigator, Australia
Dr Nguyen Thi Thanh Thuy	World Health Organization, Western Pacific Regional Office	Technical Adviser on HIV/STI Epidemiology, Surveillance, Monitoring and Evaluation
Dr Sepehr Tabrizi	Royal Women's Hospital Melbourne	Senior Laboratory Scientist
Dr Yueping Alex Wang	University of New South Wales	Epidemiologist

## Funding

The survey was supported by the Ministry of Health Vanuatu, WHO Western Pacific Regional Office, Secretariat of the Pacific Community and the University of New South Wales, through funding principally provided by the Global Fund to Fight AIDS, Tuberculosis and Malaria.

## Ethics Approval

The survey was approved by the Vanuatu Health Research and Ethics Committee and the Human Research Ethics Committee, UNSW, Australia.

## Objectives

For the first round of SGS surveys, the objectives were as follows:

- strengthen HIV surveillance capacity in Vanuatu in conducting HIV/STI and behavioural surveys;
- provide baseline data on the HIV epidemic for future monitoring of HIV trends in selected population sub-groups;
- analyse demographic and behavioural factors in these groups;
- identify STI prevalence in asymptomatic pregnant women;

- provide information on the effectiveness of HIV prevention and control programmes.

Infections to be detected in the surveys included:

- Human immunodeficiency virus (HIV);
- *Neisseria gonorrhoeae* (gonorrhoea);
- *Chlamydia trachomatis* (chlamydiosis); and
- Syphilis: as reflected by prevalence of treponemal seropositivity.

## **The Strategic Plan for Response to STI, HIV and AIDS**

### **The Plan**

The first National Strategic Plan was developed for 2003 to 2007. The plan was endorsed in July 2004 by the Ministry of Health Executive Board and the main priority areas in the strategic plan cover

- Prevention
- Blood safety
- Early intervention of PLWHA
- Improvement of surveillance
- Programme management
- Staff competence

### **The Country Coordinated Mechanism and members**

The National Country Coordinated Mechanism was established as part of a requirement of the Global Fund project. The chair of the CCM is the Vanuatu Family Health Association, NGO partner to the Ministry of Health. Other members include personnel from the Ministry of Health, Wan Smol Bag Theatre, Rotary against Malaria, Volunteer Service Organization (VSO), IZA Foundation and WHO.

## **HIV/AIDS and STI case reports**

### **Surveillance Structure**

- The case-definition used for AIDS surveillance is based on WHO classification and reporting begun in 1988
- HIV and AIDS cases are reported to the Ministry of Health, Vanuatu. No systematic reporting of results is currently in place.
- Blood donors and selected hospitalized patients are routinely screened for HIV infection

- Other notifiable STIs are syphilis and gonorrhoea. Chlamydia is not a notifiable infection and there is no local capacity for chlamydia testing
- Pregnant women are routinely screened for syphilis at their first antenatal visit.

## Reported Cases

HIV prevalence in Vanuatu is low despite the annual screening of approximately 1000 blood specimens received from blood donors and some selected hospitalized patients and immigrants. Vanuatu reported its first HIV case in 2002, and a second has now been officially reported (Table 7.1). Both cases have been among females and one case was attributed to mother to child transmission. The HIV prevalence among adults aged 15-49 years was 1.9 per 100 000 population in 2004. It is likely that more people are HIV positive but remain undiagnosed due to weaknesses in reporting and surveillance systems in the country.

**Table 7.1: Distribution of cumulative reported HIV cases by sex and mode of transmission in Vanuatu, end of 2004**

	Vanuatu	6 PICTs in SGS project*	All PICTs
<b>Sex</b>			
Male	0	152	5749
Female	2	103	5043
Unknown	-	0	420
<b>Mode of transmission</b>			
Homo/bisexual	0	18	-
IDU	0	1	-
Heterosexual	0	202	-
Blood products	0	1	-
Mother to infant	1	21	-
Other/unknown	1	12	-

Ref: Laboratory Register.

\* Excluding reports from the Solomon Islands

## Second Generation HIV Surveillance Surveys

### Executive Summary: Vanuatu

Summary of Millennium Development Goal 6: Combat HIV/AIDS, malaria and other diseases and UNGASS indicators for a concentrated/low-prevalence Epidemic

Indicator	Population	Per cent
Millennium Development Goal 6: Combat HIV/AIDS, Malaria and other diseases <sup>1</sup>		
18. HIV Prevalence among 15-24 year old pregnant women	Pregnant Women (n=288)	0*
19a: Condom use at last high-risk sex <sup>2</sup>	Youth (n=326)	53.3
- Commercial		37.3
- Non-commercial		25.8
19b. % of population aged 15-24 years with comprehensive correct knowledge of HIV/AIDS <sup>3</sup>	Youth (n=326)	25.8
UNGASS		
% of (most at risk populations) who <u>ever</u> received HIV testing in the who know the results <sup>4</sup>	Youth (n=326)	3.1
% of (most at risk populations) who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission <sup>3</sup>	Youth (n=326)	25.8
% of (most at risk populations) who are HIV infected	STI Clinic attendees (n=105)	0*

\* Personal Communication (Ministry of Health, Vanuatu) 1 The target relevant to this goal is "Have halted by 2015 and begun to reverse the spread of HIV/AIDS". This target comprises of a series of indicators, two of which are measurable for Vanuatu from the SGS surveys. Further details on methodology is provided in chapter 1.

2 Participants were asked for condom use at last sex with non-commercial and commercial partners separately. Therefore this indicator is reported separately for non-commercial and commercial partners. 3 Data not collected on transmission through sharing a meal. Indicator constructed using the following collected questions: condom protection; faithful partner; mosquito bite; healthy looking person with HIV. 4 UNGASS indicator was HIV testing and know the result in the last 12 months. Data collected for this survey was 'ever' tested.

## A: STI Prevalence Survey among pregnant women

### Methodology

A sample of 292 pregnant women attending their first routine antenatal visit at the urban site at Vila Central Hospital, Port Vila were consecutively recruited into the survey from June to July 2005. Participants completed a confidential questionnaire administered by trained interviewers to obtain demographic, behavioural and other information. All participants were provided with survey information in the form of leaflets or group information sessions prior to taking part in the survey. The survey material was provided in local languages as well as in English.

Unlinked anonymous testing for HIV and linked confidential testing for other selected STIs (syphilis, gonorrhoea) was undertaken. A 10ml blood sample and first catch urine specimen was collected from participants. Urine samples were collected and transferred daily to Vila Central Hospital Laboratory for storage. Frozen urine was shipped to Royal Women's Hospital, Melbourne for testing using PCR for *C. Trachomatis* and *N. gonorrhoeae* using ROCHE COBAS Amplicor (Roche Diagnostics, Pleasanton, California, United States of America). All positive *N.gonorrhoeae* specimens were confirmed by an alternate PCR assay (Tabrizi et al (2005)). Serology was performed at the Vila Central Hospital Laboratory. Samples were screened for HIV using the Serodia HIV test and the Abbott Determine test. Positive samples from the two consecutive tests were sent to the NRL, Australia for confirmation by Western blot. Syphilis testing was performed by using the Rapid Plasma Reagin (RPR) Test.

## Summary of method of SPS Survey, Vanuatu

Survey design	Unlinked Anonymous Testing (HIV) Linked Confidential Testing (syphilis and gonorrhoea)
Sample size	292 (3 refusers)
Sampling method	Consecutive
Site locations	Antenatal clinic of the Vila Central Hospital, Port Vila
Type of consent	Written
Administration of questionnaire	Interviewer administered with an average completion time of 20-25 minutes
Data collection period	June to July 2005
Laboratory tests	HIV: Serodia HIV test and Abbott Determine rapid HIV a-b test. Reactives confirmed with Western Blot. Syphilis: RPR Gonorrhoea and Chlamydia: Urine PCR

## FHI Indicators

**Table 7.2: Selected indicators of STIs and sexual behavior among 288 pregnant women in Vanuatu,**

Key indicators	<25 years (n=117)	≥25 years (n=171)	Total (n=288)
HIV prevalence (%)	0	0	0
Syphilis prevalence (%)			2.8
Chlamydia prevalence (%)	19.7	7.3	13.2
Gonorrhoea prevalence (%)	4.4	0.7	2.4
Median age at first sex (years)			18 (12-25)
Proportion of reporting commercial sex in last 12 months (%)			2.1
Median number of sex partners in life			2 (1-31)
Proportion having no incorrect beliefs about mother to child transmission (%) <sup>1</sup>			49.7

<sup>1</sup> based on knowledge of whether a pregnant woman infected with HIV/AIDS can transmit the virus to her unborn baby and whether a woman with HIV/AIDS can transmit the virus to her newborn child through breastfeeding



## Demographic characteristics

A total of 292 pregnant women from one antenatal clinic in Vanuatu were recruited. Three women declined to participate in the survey. A participant who was aged 45 years and three who had age not stated were excluded from the final analysis, leaving a final survey group of 288 pregnant women.

Participants' ages ranged from 15-44 years (mean 25.8 years, standard deviation 5.9 years), with 47.6% (117) aged 25 years and less (Table 7.3). Approximately 36% of women were married and currently living with their spouses and the median age at first marriage was 22 (range 14-38 years). The majority of women (69.8%) were housewives/not employed, while the father of the baby's occupation varied among company worker, unemployed, government worker, farmer, business men, and transport worker (Table 7.3).

**Table 7.3: Demographic characteristics of 288 pregnant women in Vanuatu, 2005**

Characteristic	Number	Percentage
<b>Age group (years)</b>		
15-19	43	14.9
20-24	94	32.6
25-29	69	24.0
30-34	52	18.1
35-39	27	9.4
40-44	3	1.0
<b>Residence</b>		
Capital city	23	8.0
Urban village	89	30.9
Rural village	170	59.0
Other	6	2.1
<b>Education</b>		
Never attended school	5	1.7
Primary school	121	42.0
Secondary school	145	50.4
Higher (university/college)	14	4.9
Not stated	3	1.0
<b>Ever married</b>		
Yes	116	40.3
No	170	59.0
Not stated	2	0.7
<b>Current living arrangement</b>		
Married, living with spouse	103	35.8
Married, living with other sexual partner	7	2.4
Married, not living with spouse or other partner	4	1.4
Not married, living with sexual partner	134	46.5
Not married, not living with sexual partner	37	12.9
Not stated	3	1.0
<b>Occupation of baby's father</b>		
Company worker	75	26.0
Unemployed	75	26.0
Government worker	23	8.0
Farmer	16	5.5
Business	14	4.9
Transport worker	12	4.2
Student	10	3.5
Other	61	21.2
Not stated	2	0.7

### Pregnancy characteristics

Among the 288 pregnant women, 72 (25.0%) were primiparous. The median gestation was 20 weeks with a range from 2-40 weeks. More than two thirds of women reported they had not been trying to get pregnant. A third of women (37.8%) reported using at least one contraceptive in the past year. The most popular contraceptive was birth control pills, followed by male condoms, Depo-Provera or injectables, withdrawal/pulling out and safe period by calendar or temperature.

## Risk behaviours

Table 7.4 details selected risk and sexual behavioural characteristics of the women by age category.

The median age at first sex was 18 years and ranged from 12 to 25 years. The median number sexual partners was two (range 1 to 31) in lifetime and one (range 1-5) in the last 12 months. There were 195 (67.7%) women reporting with multiple sexual partners in their lifetime, although only 23 (8.0%) women had multiple partners in last 12 months.

Few women reported having had commercial sex (6, 2.1%) or concurrent partners (12, 4.2%) in the last 12 months. About half (143, 49.7%) of the women reported ever having used a condom in their life. In the previous 12 months 17 women were diagnosed with an STI: eight gonorrhoea, three trichomoniasis, two candidiasis and one syphilis.

**Table 7.4: Behavioural characteristics of 288 pregnant women by age in Vanuatu**

Outcome	<25		≥25		Total	
	No.	%	No.	%	No.	%
Median age at first sex	18		19		18	
Age at first sex						
<18	60	43.8	40	26.5	100	34.7
≥18	71	51.8	91	60.3	162	56.3
Not stated	6	4.4	20	13.2	26	9.0
Number of sexual partners in life						
1	41	29.9	48	31.8	89	30.9
≥2	96	70.1	99	65.6	195	67.7
Not stated	0		4	2.6	4	1.4
Number of sexual partners in last 12 months						
1	120	87.6	136	90.7	256	88.9
≥2	12	8.8	11	7.3	23	8.0
Not stated	5	3.6	4	2.6	9	3.1
Sex for money or gift in last 12 months						
Yes	5	3.6	1	0.7	6	2.1
No	132	96.4	149	98.7	281	97.6
Not stated	0		1	0.6	1	0.3
Concurrent partner in last 12 months						
Yes	7	5.1	5	3.3	12	4.2
No	130	94.9	144	95.4	274	95.1
Not stated	0		2	1.3	2	0.7

Approximately half (49.7%) of the women were aware that HIV can be transmitted from a mother to her unborn baby and through breast feeding. Only 35.4% of women thought a person could get confidential HIV testing in their community.

## Prevalence of HIV and other sexually transmitted infections

Among the 288 women with available urine specimens, 38 (13.2%) were diagnosed with chlamydia and Seven (2.4%) with gonorrhoea. There were six women (2.1%) with both chlamydia and gonorrhoea infection (Table 7.5).

No women were found to be infected with HIV (verbal communication awaiting written confirmation). Syphilis results are awaiting final confirmation.

**Table 7.5: Prevalence of HIV and other STIs among pregnant women Vanuatu**

Sexually transmitted infection	Number tested	Number infected	Prevalence (%)	95% CI
Chlamydia	288	38	13.2	9.3-17.1
Gonorrhoea	288	7	2.4	0.7-4.2
Chlamydia/ Gonorrhoea	288	39	13.5	9.6-17.5
Syphilis	240	2	0.8	0.2-1.5
HIV	288	0	0	---

Table 7.6 details chlamydia infection by demographic characteristics and sexual behaviour. There was an association between chlamydia infection and age with younger women being more likely to have infection than older women (19.7% versus 7.3%, chi square 9.7,  $p < 0.01$ ).

**Table 7.6: Prevalence of chlamydia by selected demographic and risk factors among 288 pregnant women Vanuatu**

	Chlamydia		
	Total	No.	%
<b>Age</b>			
<25	137	27	19.7
≥25	151	11	7.3
<b>Marriage</b>			
Yes	116	5	4.3
No	170	33	19.4
<b>Education</b>			
Never attended school	5	1	20.0
Primary school	121	11	9.1
Secondary school	145	24	16.6
Higher (uni/college)	14	2	14.3
<b>Current living area</b>			
Capital city	23	2	8.7
Urban village	89	12	13.5
Rural village	170	23	13.5
<b>Age at first sex</b>			
<18	100	16	16.0
≥18	162	18	11.1
<b>Number of sexual partners in life</b>			
1	89	8	9.0
≥2	195	30	15.4
<b>Number of sexual partners in last 12 months</b>			
1	256	30	11.7
≥2	23	7	30.4
<b>Sex for money/gift in last 12 months</b>			
Yes	6	3	50.0
No	281	35	12.5
<b>Concurrent partner in last 12 months</b>			
Yes	12	3	25.0
No	274	35	12.8
<b>Ever used condom</b>			
Yes	143	25	17.5
No	142	13	9.2

## **B: HIV Surveillance Survey among STI Patients**

### **Methodology**

A sample of 106 STI patients attending two STI clinics in Port Vila, Efate were consecutively recruited into the survey from May to June 2005. Participants completed a confidential questionnaire administered by trained interviewers to obtain demographic, behavioural and other information. All participants were provided with survey information in the form of leaflets or group information sessions prior to taking part in the survey.

Unlinked Anonymous testing for HIV was undertaken. A 5ml blood sample was collected from participants and sera were tested at Vila Central Hospital laboratory. Samples were screened for

HIV using the Serodia HIV test followed by the Abbott Determine test if it was reactive with Serodia. Positive samples from the two consecutive tests were sent to the NRL, Australia for confirmation by Western Blot.

## Summary of method of HSS survey, Vanuatu

Population	STI clinic patients
Survey design	Unlinked Anonymous Testing
Sample size	106
Sampling method	Consecutive
Site locations	Port Vila, Efate
Type of consent	Written
Administration of questionnaire	Interviewer administered
Data collection period	May to June 2005
Laboratory tests	HIV: Serodia test and Abbott Determine rapid HIV a-b test Syphilis: RPR

## FHI Indicators

**Table 7.7: Selected indicators of HIV and sexual behaviour among 105 STI clinic attendees in Vanuatu, 2005**

Key indicators	N=105
HIV prevalence (%)	0
Median age at first sex (years)	17 (11-24)
Proportion having sex with more than one partner in the last 12 months (%)	45.7
Median number of sex partners in the last 12 months	1 (0-17)
Proportion reporting commercial sex in the last 12 months (%)	16.2
Proportion of men reporting sex with men in the last 12 months (%)	2.2
Proportion using condoms at last sex with female partner (%)	11.1
Proportion using condoms at last MSM (%)	---
Proportion using condoms with partner consistently (%)	2.0

## Demographic characteristics

A total of 106 STI clinic patients were recruited from one STI clinic in Port Vila, Efate. One male participant aged 14 years did not satisfy the inclusion criteria and was excluded, leaving 105 participants in the final analysis.

The participants consisted of 46 (43.8%) males and 59 (56.2%) females. Participants' ages ranged from 15-44 years (mean 23.2 years, standard deviation 5.9 years), with 70.5% (74) under 25 years of age. The majority of participants were from urban (50.5%) or rural (40.9%) villages. Few (8.6%) participants were married and living with their spouse. Approximately 60% of participants had attended secondary school or higher. Less than a quarter (22.9%) of participants reported being away from home for more than one month in the last year. There were 42 (40.0%) participants who reported drinking alcohol at least once in the last month. None reported injecting drugs in the last 12 months.

## **Sexual behaviours**

Table 7.7 details selected sexual behaviour indicators for STI clinic attendees. The majority (97.1%) of participants have had sexual intercourse. The median age at first sex was 17 years and ranged from 11 to 24 years. Among all participants, 89 (84.8%) had sex with regular partner(s), 17 (16.2%) had sex with commercial partner(s), and 25 (23.8%) had sex with casual partners in the last 12 months. The median number of sexual partner of all participants was one (range 0-17). Among all participants, 48 (45.7%) have had more than one partners in last 12 months.

A low proportion (19.2%) of condom use at last sex with the most recent partner was reported among sexual active STI clinic patients. Only 2.0% of respondents reported using a condom consistently (“every time”).

Few male participants (4.3%) reported they had ever had sex with men either in their lifetime (4.3%) or in the last 12 months (2.2%). No male participant reported ever having sex with a man for money or gift. Approximately one third (29.5%) of participants had been diagnosed with an STD in the last 12 months, most commonly gonorrhoea, followed by unspecified bacterial infection and genital discharge.

## **Prevalence of HIV**

There was no HIV detected among STI clinic patients participating in the survey.

## **Limitations of the Survey**

The HSS was carried out as a pilot survey to establish a methodology for surveying groups at high risk of HIV infection. While results present an interesting profile of STI clinic patients, only a limited number of participants were surveyed and results should be interpreted accordingly. In particular, caution should be used in interpretation of the HIV prevalence results. Consideration of the necessary sample sizes required to reliably detect HIV prevalence in low prevalence settings should be given to future surveys.

# **C: Behavioural Surveillance Survey among youth**

## **Methodology**

A behavioural prevalence survey of risk behaviours related to HIV and or STI infection in 328 unmarried youth aged 15-24 years was conducted between January to February 2005. Participants were consecutively recruited and completed a confidential questionnaire administered by trained interviewers which included standardized questions on behavioural risk factors and attitudes towards HIV/AIDS. Participation in the survey was voluntary and informed consent was obtained from all eligible participants prior to data and sample collection.

## Summary of methods of BSS survey , Vanuatu

Population	Youth (unmarried, aged 15-24 years)
Sample size	328 (11 refusers)
Sampling method	Consecutive
Site locations	2 sites
Type of consent	Verbal
Administration of questionnaire	Interviewer administered with an average completion time of 30-35 minutes
Data collection period	January to February 2005

## FHI Indicators

**Table 7.8: Selected behavioural indicators for 326 unmarried Youth, Vanuatu 2005**

Indicator	N=326
Median age at first sex by gender (years)	
Total	16 (10-22)
Male	16 (11-22)
Female	16 (10-22)
Proportion of youth sexually active in the last 12 months (%)	62.0
Youth using condom at first sex (%)	16.9
Proportion of youth with multiple partners in the last 12 months (%)	43.3
Median number of sex partners in the last 12 months	1 (0-18)
Proportion of youth using condoms at last sex with non-commercial partners (%)	37.3
Consistent condom use with non-commercial partners in last 12 months (%)	15.7
Proportion of young men reporting sex with female commercial partner in 12 months (%)	8.9
Median number of female commercial partners in 12 months among young men	0 (0-5)
Proportion of young men using condoms at last sex with female commercial partner (%)	53.3
Consistent condom use of young men with female commercial partners in last 12 months. (%)	26.7
Proportion of young men reporting sex with men in the last year (%)	0.6
Proportion who have ever received HIV testing and know the result (%)	3.1
Proportion reporting correct knowledge of HIV/AIDS prevention methods (%) <sup>1</sup>	46.3
Proportion reporting no incorrect beliefs about HIV/AIDS transmission (%) <sup>2</sup>	32.5
Proportion who both report correct knowledge of HIV/AIDS prevention and no incorrect beliefs about HIV/AIDS transmission (%)	21.2
Proportion reporting accepting attitudes towards those living with HIV (%) <sup>3</sup>	47.2

1 Respondents who can correctly identify consistent condom use, mutual monogamy between partners and abstaining from sex as methods to reduce risk of HIV transmission

2 Respondents who know a person cannot get HIV from a mosquito bite and that a healthy looking person can be infected with HIV

3 Respondents who would be willing to share a meal with a person with HIV/AIDS and be willing to buy food from a shopkeeper who had HIV and would not want it to remain a secret if a family member had HIV infection



## Demographic characteristics

A total of 328 youth were recruited from one survey site in Vanuatu. Based on the inclusion criteria two youth were excluded as age was not known, leaving 326 participants in the final survey population of which 168 (51.5%) were male and 158 (48.5%) female.

Participants' ages ranged from 15-24 years (mean 18.8 years, standard deviation 2.6 years), with 64.1% (209) aged less under 20 years of age (Table 7.9). The level of highest education varied among participants with 25.5% reporting primary school, 66.9% secondary school and 5.8% university or college. The majority (89.9%) of participants were currently living with their family or relatives.

A third of participants (33.8%) reported being away from home for more than one month in the last year. Presbyterian was the dominant religion among youths (30.7%), followed by Seven Day Adventist (22.7%) and Anglican (9.5%). The majority (99.1%) youth belonged to Ni-Vanuatu, the most common ethnicity in the country.

**Table 7.9: Demographic characteristics of 326 youth Vanuatu 2005**

Characteristic	Number	Percentage
Age group (years)		
15-19	209	64.1
20-24	117	35.9
Education		
Primary school	83	25.5
Secondary school	218	66.9
Higher (university/college)	19	5.8
Not stated	6	1.8
Current living status		
Alone	20	6.1
With family/relatives	293	89.9
Other	11	3.4
Not stated	2	0.6
Away from home for more than 30 days in last 12 months		
Yes	110	33.8
No	212	65.0
Not stated	4	1.2

## Substance behaviours

Over half of participants (53.4%) had consumed alcohol at least once in the last four weeks. Over half of youths (56.8%) had used drugs, most commonly tobacco followed by kava and marijuana. Only two (0.6%) youth had injected drugs in the last 12 months and neither of these participants reported needle sharing.

## Sexual behaviours

Table 7.8 shows selected behavioural indicators for youth participating in the survey. Three quarters (76%) of youths have had sex in their life time, and the median age at first sex was 16 years (range 10-22 years). In the last 12 months, 62% of youth had sex. In the majority of cases this was with a casual partner (56.7%), although in a few cases it was with a commercial partner (9.8%).

Among all participants, 141 (43.3%) had more than one partner in last 12 months.

The median number of sexual partners of all participants was zero (range 0-18). For youth who had been sexually active in the last 12 month, the median number of partners was two (range 1-18).

Among the 168 male participants, only one (0.6%) reported ever having had sex with a male partner. A high proportion of youth reported having had sex for money or gifts (39.9%), and concurrent partners (10.7%).

Nearly half (48%) of the sexually active youth reported having had sex without the use of a condom. Few youth reported consistently using a condom either with commercial partners (18.7%, 6 of 32) or casual partner (15.7%, 29 of 185) in the last 12 months. Women were more likely to have used a condom at first sex than men (26.7% versus 8.3% chi square 15.1,  $p < 0.01$ ).

About 15.6% of participants had been diagnosed with a genital discharge or genital ulcer or sore in the last 12 months.

### **HIV Knowledge, belief and attitudes**

Less than half (46.3%) of participants had correct knowledge of HIV prevention in terms of condom use, importance of a faithful partner and abstinence from sex. Only a third (32.5%) of youth reported correct knowledge of HIV transmission. Overall, a higher proportion of men had better knowledge of HIV/AIDS prevention and transmission factors than women, although this was not statistically significant (24.4% versus 17.7, chi square 2.0,  $p = 0.16$ ). Few (3.1%) participants have had an HIV test and knew the result.

## **Summary**

- Vanuatu is a country with a low prevalence of HIV infection. No HIV infection was identified among either the pregnant women or the STI clinic attendees participating in the prevalence surveys.
- Chlamydia is endemic among pregnant women. Strategies to address this should be developed at the country level.
- Condom use is extremely low, despite condoms being an effective strategy in prevention of HIV and STI transmission.
- The population remains highly vulnerable to HIV infection with biologic, behavioural and sexual indicators of risk. For example, youths participating in the behavioural surveillance survey reported multiple sexual partners in the last 12 months and a low level of knowledge of HIV/AIDS. Few youths had received HIV testing and knew the result.
- The HIV sero-surveillance survey has helped to establish a methodology for surveying groups at high risk of HIV infection. Considerations for future surveys include identification of high risk populations, sampling techniques and estimates of sample size which would be needed to reliably detect HIV prevalence in low prevalence settings.

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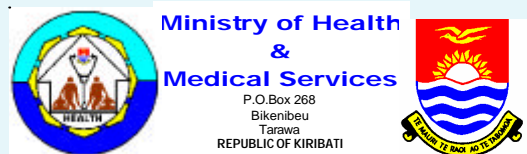
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