

STI Epidemiological Update for Pacific Island Countries 2009

While Pacific Island Countries and Territories (PICTs) have been collecting HIV and AIDS case data for many years, 2009 was the first year in which routine data on other sexually transmitted infections (STIs) were collected and reported. Eleven PICTs¹ with access to laboratory testing facilities (either in country or by referral) reported on three STIs; chlamydia, gonorrhoea and syphilis.²

STIs are an important cause of morbidity in adults and also infants born to infected parents. While many chlamydia infections are asymptomatic, if left untreated, both chlamydia and gonorrhoea infection can cause pelvic inflammatory disease, ectopic pregnancy and infertility. They may also cause conjunctivitis and pneumonia in newborns. Syphilis can cause miscarriage, stillbirth and congenital syphilis. The latter may cause irreversible damage to cardiovascular and nervous system of the newborn infected child. Amongst both men and women, HIV transmission is facilitated by the presence of any STI, including asymptomatic chlamydia.

Limitations of the Data

There are significant limitations to the data. Not all PICTs were able to provide complete data for the twelve months, either because testing was introduced part way through the year or because the data collection system was inadequate. In some cases, the quality assurance of the laboratory testing is poor, and demographic data is missing for a proportion of the cases. The data should therefore be interpreted with caution.

Testing Methodology

By the end of 2009, chlamydia and gonorrhoea diagnosis by high sensitivity nucleic acid assay testing (NAAT) was available in eight of the reporting PICTs and by referral to an overseas reference laboratory to a further three. This technology was introduced in most PICTs in late 2008 or early 2009 and there were a number of challenges associated with implementation, so few PICTs were able to report test numbers for the full year.

The recommended testing algorithm for a laboratory-confirmed diagnosis of syphilis in the Pacific includes a *Treponema pallidum* specific test plus a Rapid Plasma Reagin (RPR) titre for the staging of

¹ Cook Islands, Niue, Samoa, Tonga, Tuvalu, Federated States of Micronesia, Kiribati, Nauru, Palau, Republic of Marshall Islands, Vanuatu

² Improving national sexually transmitted infections surveillance in Pacific Island countries and territories: Consensus document on sexually transmitted infections case definitions and minimum data set. STI Working Group 2008 http://www.spc.int/hiv/index.php?option=com_docman&task=cat_view&gid=107&Itemid=148

active syphilis. This algorithm has not been routinely implemented in many laboratories, so an indeterminate proportion of “positive” syphilis cases may, in fact, be positive on screening test only and not confirmed diagnoses. In addition, yaws, which has been endemic in some PICTs in the recent past, is indistinguishable from syphilis by serological testing. Therefore, syphilis data in particular should be interpreted with caution.

Reported Test Numbers

In 2009, over 13,000 chlamydia and gonorrhoea tests and almost 20,000 syphilis tests were reported in the eleven PICTs. This represents around 3% of the estimated population aged 15 to 49 years being tested for chlamydia and gonorrhoea and 5% for syphilis in 2009, although, as stated above, reporting was for the year was incomplete and therefore actual testing rates are likely to be higher. Table 1 shows the number of reported tests conducted in each sub region.

Table 1: Estimated population aged 15-49 years and reported STI tests in 2009 by sub region

	2009 Adult Population³	# Chlamydia/ gonorrhea tests	# Syphilis tests
Polynesia ⁴	148,987	4,680	2,753
Micronesia ⁵	150,404	6,807	16,715
Melanesia ⁶	121,128	1,694	112
Total	420,519	13181	19,580

Of the reported samples tested for chlamydia and gonorrhoea in 2009, 54% were from females, 14% from males and in 32% gender was not recorded. The majority of the samples from females (78%) were from women attending antenatal clinics. These patients would be predominantly asymptomatic, and screened as part of the antenatal testing programme. Conversely, the majority of males tested were attending STI clinics with symptoms of STIs and were therefore tested for diagnostic purposes. The expectation is that patients experiencing STI symptoms would be much more likely to be diagnosed with an STI than patients offered STI testing as part of a routine screening programme.

³ Estimated population 15-49 years. Statistics and Demography, SPC.

http://www.spc.int/sdp/index.php?option=com_docman&task=cat_view&gid=28&Itemid=42

⁴ Cook Islands, Niue, Samoa, Tonga, Tuvalu

⁵ Federated States of Micronesia, Kiribati, Nauru, Palau, Republic of Marshall Islands

⁶ Vanuatu

Antenatal Testing

The estimated number of births in ten reporting PICTs⁷, which can be used as a proxy for the number of pregnancies, was 22,552 in 2009. The number of reported chlamydia and gonorrhoea tests in antenatal women was 5,523 or approximately a quarter of the estimated number of pregnant women. Although Chlamydia and gonorrhoea testing is not available to all antenatal women for logistical reasons, the reported number of antenatal women tested is likely to be an underestimate, as insufficient data was provided to determine either the reason for testing or the gender in up to 42% of samples in 2009. As Table 2 shows, the estimated proportion of antenatal women tested ranges from 12% in Melanesia to 34% in Micronesia.

Table 2: Reported number and percentage of antenatal women tested for chlamydia and gonorrhoea in 2009 by sub region

	Estimated Births 2009 ⁸	No. Chlamydia/ gonorrhea tests	%
Polynesia	7,838	2,172	27.7%
Micronesia	7,308	2457	33.6%
Melanesia	7406	894	12.1%
Total	22,552	5523	24.5%

Screening versus Diagnostic testing

Of all the tests for chlamydia and gonorrhoea in eleven PICTs, 48% were screening tests on samples from asymptomatic people (mainly antenatal women), 18% were diagnostic tests on samples from STI patients, but 34% of reported tests had insufficient information to determine whether the sample was a screening or diagnostic test.

The number of positive tests for the three STIs as a percentage of total number of tests for asymptomatic patients (screening) and symptomatic patients (diagnostic) is presented in Figure 1. As expected, the rates of gonorrhoea were much higher in the diagnostic population compared with the screening population (12.7% versus 3.0%). Syphilis rates were lower in both populations, but the rate in the diagnostic population was almost double that in the screening group (5.2% versus 2.8%). More surprisingly, but in line with previous findings⁹, were the high rates of chlamydia in both the diagnostic and screening populations (25.4% versus 19.9%).

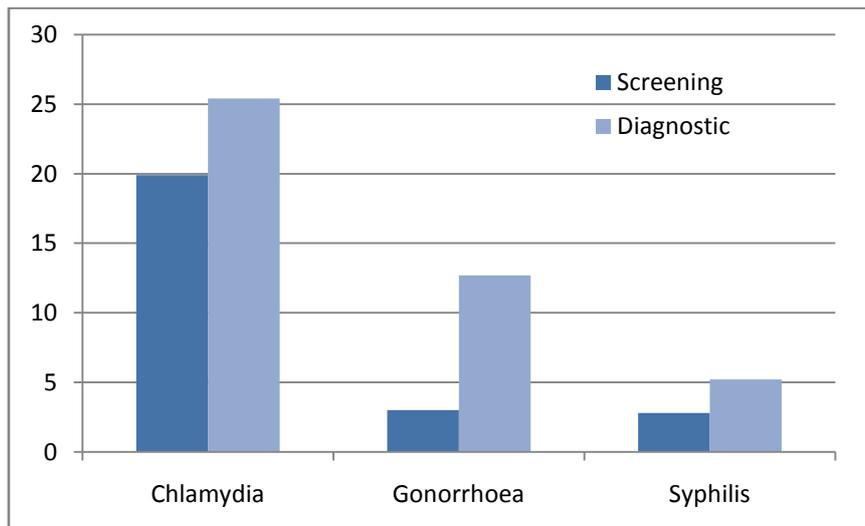
⁷ Excluding Palau

⁸ Calculated from population estimates and crude birth rate for ten reporting PICTs. Statistics and Demography, SPC

⁹ Second Generation Surveillance Surveys in PICTs 2004-2008.

http://www.spc.int/hiv/index.php?option=com_docman&task=cat_view&gid=76&Itemid=148

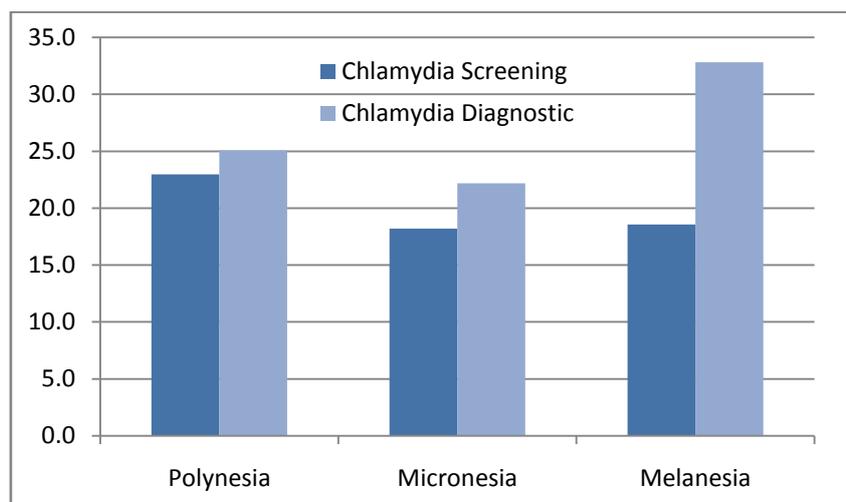
Figure 1: Percentage of positive STI results in screening tests versus diagnostic tests 2009



There were sub regional differences in the positivity rates for the three STIs, although it should be noted that there is only data from one Melanesian PICT and the number of tests conducted is relatively small and therefore subject to sampling bias.

Figure 2 shows that while there was little difference in Polynesian PICTs in chlamydia rates between screening (23%) and diagnostic (25%) tests, there were greater differences in both Micronesia and, in particular, Melanesia (18% versus 22%, and 19% versus 33% respectively).

Figure 2: Percentage of positive chlamydia tests in screening tests versus diagnostic tests by sub region in 2009



The majority of screening tests in 2009 were on antenatal women and these rates are very high by international standards, particularly in Polynesia. Table 3 shows chlamydia prevalence in antenatal women in selected countries for comparison.

Table 3: Comparison of Chlamydia Prevalence in ANC Women in Selected Countries, WHO 2001

	Italy	Thailand	Tanzania	Iceland	Jamaica	India	PNG
Chlamydia prevalence	2.7%	5.7%	6.0%	8.0%	12.2%	17.0%	26.0%

Gonorrhoea rates are generally much lower than chlamydia rates and show a statistically significant difference between screening and diagnostic tests. Amongst screening populations, gonorrhoea rates were 1.7% in Polynesia, but slightly higher in Micronesia and Melanesia at 3.8% and 3.1% respectively. In Melanesia 32% of diagnostic tests were positive for gonorrhoea compared with 10% and 12% in Polynesia and Micronesia respectively. (See Figure 3). High rates of gonorrhoea are not unexpected in the population group attending STI clinics with symptoms of STIs.

Figure 3: Percentage of positive gonorrhoea tests in screening tests versus diagnostic tests by sub region in 2009

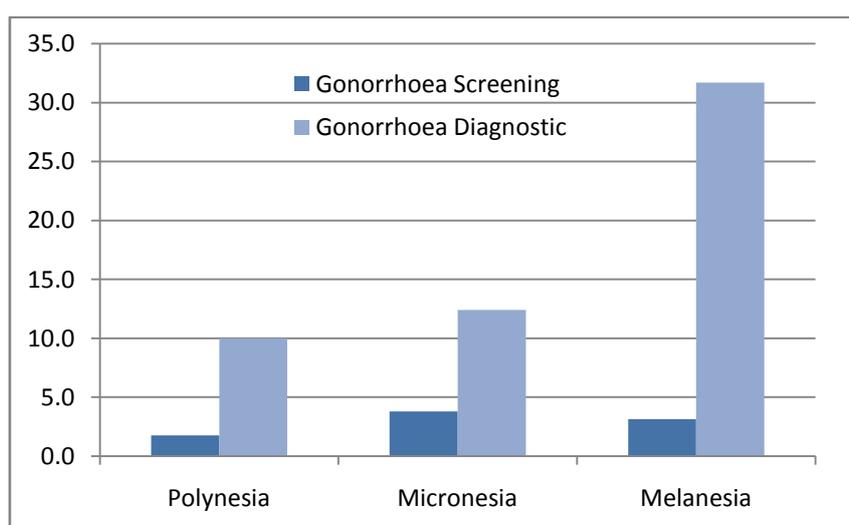
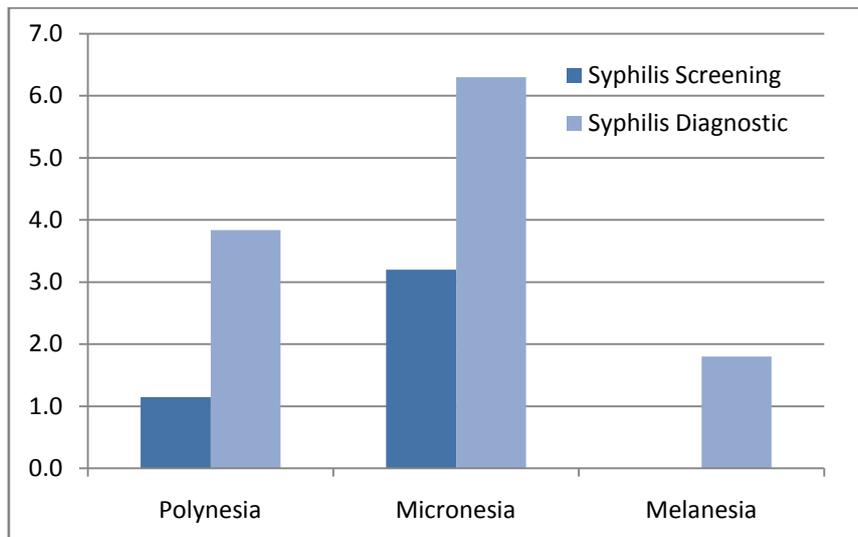


Figure 4 shows the syphilis rates in the three sub regions. Again there were significant differences between the rates in screening populations compared with those undergoing diagnostic tests, with rates of 1.1% compared with 3.8% in Polynesia and 2.6% compared with 6.8% in Micronesia. It should be noted, however, that there has been yaws in some of the Micronesian PICTs, which may be affecting the positivity rate in those PICTs. In Melanesia only a very small number of syphilis tests were reported, all from STI clinic patients, although the rates were quite low for this population at 1.8%.

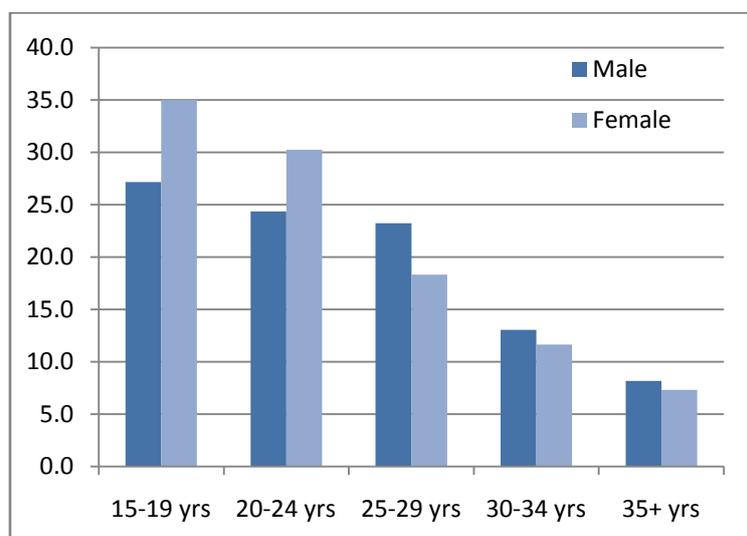
Figure 4: Percentage of positive syphilis tests in screening tests versus diagnostic tests by sub region in 2009



STI rates by age group

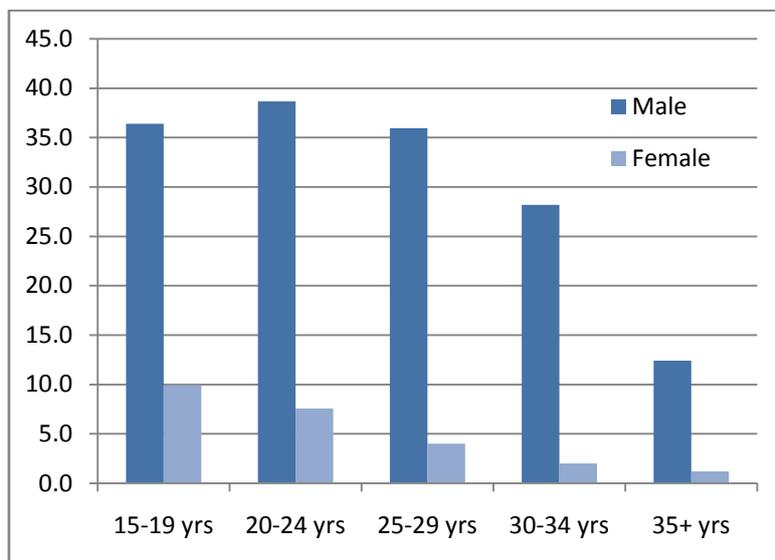
The age groups of patients tested for STIs was reported in only 48% of chlamydia and gonorrhoea tests and only 36% of syphilis tests. The age distribution of males and females testing positive for chlamydia is shown in Figure 5. In both males and females, the highest Chlamydia rate was found in the 15 to 19 year age group, with a steady decline with increasing age. This is in line with both SGS survey results in the region and international findings. Note that this is for both screening and diagnostic tests and that, although a higher proportion of the males was tested for diagnostic purposes compared with the females, chlamydia rates in females were higher than males in the 15-24 year age group. The range in males was 8.2% to 27.2% and the range in females 7.3% to 35%.

Figure 5: Chlamydia rates in males and females in PICTs by age group in 2009



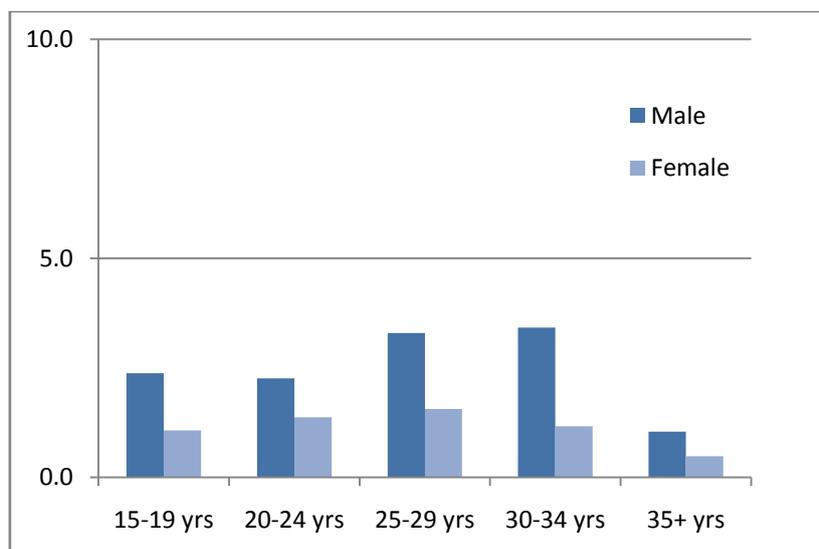
The age distribution of patients testing positive for gonorrhoea is shown in Figure 6. As with chlamydia, the younger age groups had higher rates than the older age groups. Unlike chlamydia, rates were much higher in males than females, reflecting the fact that most males were tested for diagnostic purposes, while most females were screened as part of their antenatal check. The rates for males were 12.4% to 38.7% and in females 1.2% to 9.9%.

Figure 6: Gonorrhoea rates in males and females in PICTs by age group in 2009



Syphilis rates, while lower overall than either chlamydia or gonorrhoea in the reported tests, were higher in the slightly older age groups. As Figure 7 shows, the highest rates in females were amongst the 25-29 year age group and for males in the 30-34 year age group. The rates in males were 1.0% to 3.3% and in females 0.5% to 1.6%.

Figure 7: Syphilis rates in males and females in PICTs by age group in 2009



Neonatal complications of parental STIs

Untreated STIs in pregnant women can cause neonatal complications such as premature birth, conjunctivitis (which can lead to blindness) and congenital syphilis. A small number of tests on neonatal samples were reported in 2009, although there is likely to have been significant under reporting.

A total of nine neonatal eye swabs was reported, three of which were positive for Chlamydia and one for gonorrhoea. For syphilis, 29 neonatal samples were tested, 10 of which were positive.

Twenty seven presumptive cases of congenital syphilis and one confirmed case of congenital syphilis were reported.

Conclusion

While the limitations of the data have been mentioned, this summary report represents a major step away from a reliance on resource intensive surveys to provide surveillance data. Efforts should be made to improve the quality of laboratory testing, improve data collection systems and expand reporting to all PICTs in order to provide timely, routine laboratory data to monitor STIs in the region and inform programme development across the region.