

**Sexually Transmitted Infections  
in New Zealand**

**Annual Surveillance Report  
2002**

Prepared by

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# Summary

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Surveillance of STIs in New Zealand continues to be based on voluntary data from specialist sexual health clinics (SHCs). Although SHCs see only a portion of the population with STIs, their data provide the most comprehensive source of information on the epidemiology of STIs in New Zealand. Since 1998, STI surveillance has been expanded to include data from family planning clinics (FPCs), student and youth health clinics (SYHCs), and laboratories in Waikato, Bay of Plenty (BOP) and Auckland.

## KEY POINTS

<ul style="list-style-type: none"> <li>• <i>Chlamydia</i> infections (the most common bacterial STI in New Zealand) are still increasing and may soon overtake genital warts as the most common infection in SHC patients.</li> </ul>	
<ul style="list-style-type: none"> <li>• Notifications of <i>C trachomatis</i> by participating laboratories increased during 2002 to 10,307 cases representing a rate of 598 per 100 000 population which is five times higher than that reported in Australia during the same period. Similarly, rates of <i>N gonorrhoeae</i>, at 54 per 100,000 population almost doubles that of Australia.</li> </ul>	
<ul style="list-style-type: none"> <li>• Groups at higher risk, by STI, are:</li> </ul>	
Chlamydia:	<ul style="list-style-type: none"> <li>• Maori and Pacific peoples</li> <li>• Young people aged &lt;25</li> </ul>
Gonorrhoea:	<ul style="list-style-type: none"> <li>• Maori and Pacific peoples</li> <li>• Males aged &lt;25</li> </ul>
Genital herpes:	<ul style="list-style-type: none"> <li>• Maori and Europeans</li> <li>• All age-groups</li> </ul>
Genital warts:	<ul style="list-style-type: none"> <li>• Europeans and Maori</li> <li>• Young people aged &lt;25</li> </ul>
Syphilis	<ul style="list-style-type: none"> <li>• Pacific peoples</li> <li>• Males and females &gt;35</li> </ul>

- In 2002, a total of 3372 infections due to chlamydia and 532 due to gonorrhoea were reported to ESR from SHCs. Reporting laboratories from the Auckland, Waikato and the BOP regions, confirmed 10,307 cases of chlamydia and 927 cases of gonorrhoea, while FPCs reported 1373 cases of chlamydia and 184 of gonorrhoea, and SYHCs 391 cases and 18 cases respectively. These cases represent a large number of potentially curable infections. Of SHC patients diagnosed with confirmed gonorrhoea, 188 (35.4%) were diagnosed with concurrent infections, a slight decrease compared to 2001 (41.7%).
- Until 2001, the number of cases of genital herpes simplex virus (HSV) reported at SHCs has been steadily declining since 1996. However, between 2001 and 2002 there has been an 11.7% increase in the number of cases. Cases of genital herpes in 2001 were associated with European ethnicity, and equally distributed between sexes.
- Genital warts is the most commonly diagnosed STI at SHCs, with 3510 first diagnoses reported in 2002. Highest rates are found in the 20 to 24 year age group for males and 15 to 19 year age group for females. There were comparable rates across all ethnic groups.
- The majority of STIs were in teenagers and young adults, with about two-thirds of gonorrhoea, chlamydia and genital warts cases in people aged less than 25 years. Young people were also more likely to be diagnosed with concurrent infections. There has also been an important increase in infants with STIs, which was highlighted last year and continues in 2002. It raises questions around the effectiveness of STI screening in pregnancy. Rates of chlamydia and gonorrhoea at SHCs and FPCs were considerably higher in Maori and Pacific peoples than in Europeans.

# Introduction

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This report summarises the epidemiology of sexually transmitted infections (STIs) for the year 2002, and examines trends since 1996. Using data from SHCs, FPCs, SYHCs and diagnostic laboratories, this report covers the STIs which are of public health importance, including chlamydia, gonorrhoea, genital herpes, genital warts, and syphilis. Possible factors underlying the observed distribution and trends in STIs are discussed.

As most STIs are not notifiable in New Zealand, the surveillance of STIs in New Zealand has traditionally been based on data from specialist SHCs. SHCs provide a free and confidential sexual health service. Although SHCs see only a portion of the population with STIs, their data provides the most comprehensive source of information on the epidemiology of STIs in New Zealand.

Since mid-1998, surveillance has been progressively expanded to include data from family planning and SYHCs to give a more comprehensive picture of the disease burden in New Zealand. FPCs provide sexual and reproductive health services. University and polytechnic health centres provide general health services for students and staff, including sexual health services. Youth health clinics often operate as drop-in centres and provide general and/or specialist health services for youth.

STI cases reported through the clinic-based surveillance system underestimate the true burden of disease in New Zealand because a substantial percentage of STIs are diagnosed by other health providers, particularly general practitioners (GPs). Laboratories do, however, provide a useful, complementary source of STI data because they receive specimens from all health providers. Therefore, for STIs that rely on laboratory confirmation for the diagnosis, laboratory data can be used to estimate infection rates for the general population.

Laboratory-based surveillance has been operating since 1998 in the Waikato and BOP, and in Auckland since 2000. All laboratories report chlamydia and gonorrhoea data.

# Methods

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## Data Collection

### *Clinics*

Clinics record anonymous data on the age, sex and ethnicity of all cases meeting one or more of the STI surveillance case definitions on all clinic attendees. Each month clinics send completed case report forms and clinic visit forms either directly to ESR or to a regional co-ordinator. Data are either entered directly onto the national STI surveillance database (Microsoft Access) by ESR staff or entered onto a regional STI surveillance database by a regional co-ordinator. Data from regional STI surveillance databases are sent electronically to ESR each month, where they are merged with data on the national STI surveillance database.

### *Laboratories*

Laboratories in Waikato and BOP record anonymous data on laboratory confirmed cases of chlamydia and gonorrhoea by age and sex, as well as the total number of specimens and/or patients tested. Laboratories in Auckland record anonymous data on laboratory-confirmed cases of chlamydia and gonorrhoea by age and sex, as well as the total number of specimens and/or patients tested for chlamydia. Each month laboratories send data either directly to ESR, or to a regional co-ordinator who forwards the data to ESR. Laboratory data are entered onto a database (Microsoft Access) by ESR staff.

## Case Definitions

The list of sexually transmitted infections under clinic-based surveillance and the case definition for these infections has varied over time. They were most recently revised in 1998, when STI surveillance was expanded to include data from clinics other than SHCs. The infections currently under surveillance are shown in Table 1 and the case definitions are presented in Appendix B.

**Table 1. STIs under clinic-based surveillance**

<b>Infection</b>	<b>Category or criteria</b>	<b>Site (for confirmed infections)</b>
Chlamydia	Confirmed or probable (1 <sup>st</sup> diagnosis per month)	Uncomplicated lower anogenital, PID/Epididymitis, other site
Gonorrhoea	Confirmed or probable (1 <sup>st</sup> diagnosis per month)	Uncomplicated urogenital or anorectal, PID/Epididymitis, pharynx, other site
Genital warts	1 <sup>st</sup> diagnosis at reporting clinic	
Genital herpes	1 <sup>st</sup> diagnosis at reporting clinic	
Infectious syphilis	Primary, secondary or early latent	
Non-specific urethritis (NSU)	Males only	
Chancroid	Confirmed or probable	
Granuloma inguinale (GI)	Confirmed or probable	
Lymphogranuloma venereum (LGV)	Confirmed or probable	

# STI Rates

## ***Clinic-specific Rates***

The denominator for the calculation of clinic-specific infection rates is defined as the total number of clinic visits per month for any reason. This denominator includes all new and follow-up visits made by clinic attendees, whether for sexual or other health reasons. For specialised youth centres (one-stop shops), denominator does not include non-clinical visits such as career advice and counselling. Clinic-specific STI rates were calculated by dividing the number of reported cases by the total number of the visits.

## ***General Population Rates***

Infection rates for the general population have been calculated in those regions where laboratory data on gonorrhoea and chlamydia are available, using the 2001 Census Population as the denominator.

# Data Limitations

## ***Data Completeness***

Twenty-seven SHCs provided STI surveillance data to ESR for the period January to December 2002.

Thirty-five Family Planning Association (FPA) clinics, including some outreach clinics based in schools or tertiary institutions provided surveillance data for January to December 2002. Two FPCs not affiliated with FPA provided data for January to December 2002. Clinics based in schools or tertiary institutions were closed during school holidays.

Eighteen SYHCs provided data to ESR during 2002. For various reasons, not all participating SYHCs could provide 12 months data, some could not provide clinic visits by age and/or ethnicity, and one could not provide denominator data (total clinic visits).

For January to December 2002, all seven laboratories in the Waikato and BOP and all four laboratories in Auckland reported gonorrhoea and chlamydia data to ESR.

## ***Generalisability***

Clinics participating in STI surveillance are located in cities and some larger rural towns. Most other rural towns and isolated populations have limited or no access to the services offered by sexual health and FPCs. University and polytechnic student health clinics provide services to only those students and staff who attend their institution.

While STIs are diagnosed and treated by a range of health providers including GPs, SHCs diagnose a substantial proportion of the total number of STIs, and their data provide an alert for changes occurring in the wider population.

Because not all SYHCs in New Zealand provide STI surveillance data and some provide incomplete data, data presented for these clinics, particularly analysis by age group and ethnicity, may not be representative of all SYHCs.

Valid comparisons between infection rates at different clinic types are not possible due to differences in the range of services provided, and therefore differences in the denominator (total clinic visits) used to calculate infection rates. SHCs provide mainly STI-related sexual health services, FPCs provide mainly non-STI sexual and reproductive health services, and SYHCs provide mainly general health services. Therefore, SHCs will see fewer people than FPCs and student and youth clinics but diagnose more STIs, and as a result STI rates at SHCs are higher than STI rates at other clinic types.

## ***Comparison with Previous Years***

It is not possible to directly compare STI rates at SHCs from 1998 onwards with rates from previous years, as a different denominator (the number of new clinic patients, defined as patients first attending the SHC and patients re-attending after  $\geq 3$  months had elapsed) was used prior to 1998.

# Sexual Health Clinics

## Overview

In 2002, the 27 SHCs reported 9298 confirmed STI cases. Of all SHCs attendees, 12.3% were diagnosed with an STI. Genital warts was the most commonly reported STI, followed by confirmed chlamydia, NSU in males, genital herpes, confirmed gonorrhoea and syphilis (Table 2). No cases of chancroid, granuloma inguinale or lymphogranuloma venereum were reported during 2002. A further 628 probable cases of chlamydia and 84 probable cases of gonorrhoea were reported, so that the total number of STI cases (confirmed and probable) reported in 2002 was 10010.

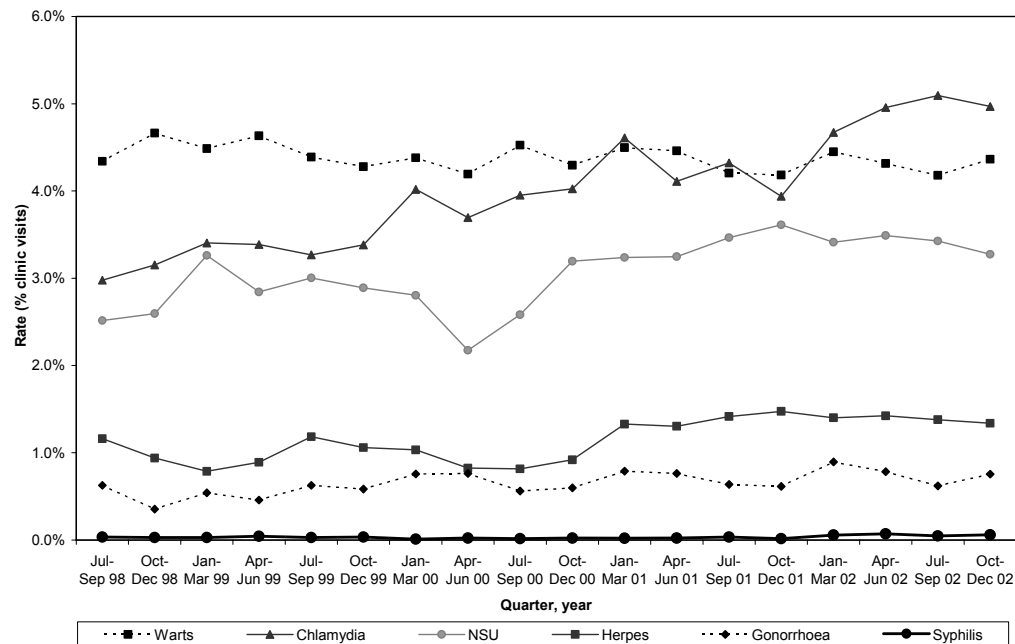
**Table 2. Confirmed STI rates and age comparisons at SHCs: 2002**

Infection	Cases	Rate <sup>1</sup>	Mean age	Median age	Age range
Chlamydia	3372	4.2%	22.2	21	13-66
Gonorrhoea	532	0.7%	25.5	23	13-60
Genital herpes	713	0.9%	28.1	26	13-65
Genital warts	3510	4.3%	24.5	22	13-68
Syphilis	47	0.0%	39.8	37	19-71
NSU (males only)	1124	3.4%	29.6	27	15-74
<b>Total STI cases</b>	<b>9298</b>	<b>11.5%</b>	<b>24.7</b>	<b>22</b>	<b>13-74</b>
Total clinic visits	81159				

<sup>1</sup>Number of cases divided by total number of clinic visits. For NSU, number of cases divided by number of male clinic visits (33060).

Figure 1 shows infection rates for the six main STIs reported by SHCs by quarter from July 1998, when the denominator used for calculating rates changed. During this period, genital warts was the most commonly reported STI, followed by confirmed chlamydia, NSU in males, genital herpes, confirmed gonorrhoea, and syphilis. If probable cases are included in the total, then chlamydia becomes the most commonly reported STI.

**Figure 1. Trends in confirmed STI rates at SHCs: July 1998 - December 2002**



Because the denominator used for calculating rates changed in 1998, rate comparisons between the years 1998 to 2002 and the years 1995 to 1997 are not possible. Therefore, Table 3 shows the annual number of confirmed STI cases from 1996 to 2002. During this period the number of clinic visits, however they were defined, were relatively stable. Figure 2 shows the yearly variation in the number of STI cases compared with the number of cases in 1995.

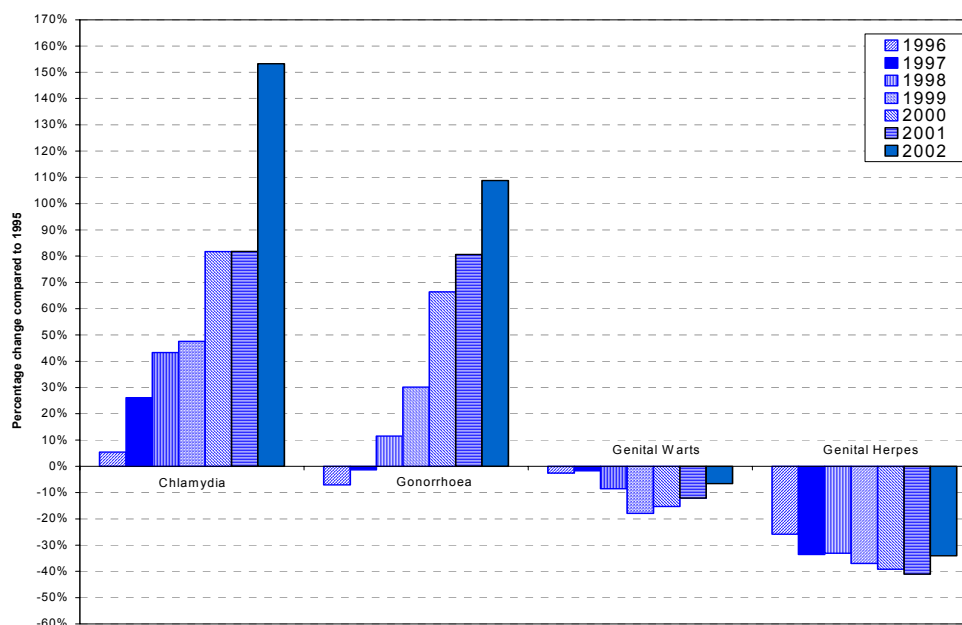
**Table 3. Number of confirmed STI cases at SHCs, 1996-2002**

	1996	1997	1998	1999	2000	2001	2002
Chlamydia	1665	1992	2263	2331	2870	3238	3372
Gonorrhoea	274	291	329	384	491	533	532
Genital Herpes	802	719	724	682	658	638	713
Genital Warts	3660	3691	3434	3083	3181	3304	3510
Syphilis	23	27	24	23	13	18	47
NSU (males only)	-	-	830 <sup>1</sup>	874	825	1054	1124

<sup>1</sup>Annualised, based on July to December 1998 data.

As shown in Table 3 and Figure 2, the number of confirmed chlamydia cases at SHCs increased each year from 1996 to 2002, with an overall increase of 103%. The number of confirmed gonorrhoea cases has increased from 1996 to 2002 by 94%. The number of genital herpes cases decreased between 1996 and 1997, but remained relatively stable from 1997 onwards until this year when it is starting to increase. The number of genital warts cases was similar from 1996 to 1997, decreased in 1998 and 1999, and increased in 2000, 2001 and 2002. There was little change in the number of syphilis cases between 1996 and 1999, with numbers dropping considerably from 1999 to 2001. However, the significant increase in 2002 is cause for concern. NSU reporting began in 1998 with little change in the number of NSU cases in males between 1998 and 2000, but with a 35% overall increase from 1998 to 2002.

**Figure 2. Percentage change in the number of STI cases for 1996 to 2002 compared with 1995**



## Clinic Attendee Demographics

Comparison of general population demographics with those of SHC attendees and cases was restricted to people aged 15-44 years because this is the age range that accounts for the vast majority (92%) of SHC attendees. Please note that longitudinal trends in ethnicity data must be interpreted with caution because ethnicity classification within the census and by health professionals has changed over time.

When SHC attendance data for 2002 are compared with 2001 census data, it is apparent that SHCs see a higher proportion of persons aged 15-19 years (23.4% vs. 16.4%), 20-24 years (26.8% vs. 14.9%), and 25-29 years (18.0% vs. 15.3%) than were in the general population (Table 4). In comparison to clinic attendance patterns, chlamydia, gonorrhoea, and genital warts were more common among those aged 15-19 years and 20-24 years, while genital herpes was common across all age groups.

In 2002, SHCs saw a higher proportion of females than were in the general population (59.3% vs. 48.8%). Compared to clinic attendance patterns, all four STIs, particularly gonorrhoea, were less commonly diagnosed among females.

In comparison to their distribution in the general population, Europeans and Maori attended SHCs slightly more frequently (70.7% vs. 69.9% for European, 17.9% vs. 14.1% for Maori) and Pacific peoples attended less frequently (3.2% vs. 5.4%). Compared to clinic attendance patterns, chlamydia and gonorrhoea were much more common among Maori and Pacific peoples, while genital warts and genital herpes were more common among Europeans.

**Table 4. Demographic comparison: general population, SHC attendees and STI cases (aged 15-44 years only)**

	Census (2001)	Total visits (2002)	Chlamydia	Gonorrhoea	Genital Herpes	Genital Warts
<i>Age group</i>						
15-19 years	16.4%	23.4%	41.3%	30.0%	19.1%	28.5%
20-24 years	14.9%	26.8%	32.3%	27.7%	27.9%	36.0%
25-29 years	15.3%	18.0%	15.4%	20.0%	21.5%	17.8%
30-34 years	17.3%	11.4%	6.6%	11.0%	15.1%	9.7%
35-39 years	18.4%	7.4%	3.0%	7.0%	10.2%	5.1%
40-44 years	17.7%	5.0%	1.4%	4.4%	6.2%	3.0%
<i>Sex</i>						
Female	48.8%	59.3%	56.0%	36.8%	54.0%	51.3%
Male	51.2%	40.7%	44.0%	63.2%	46.0%	48.8%
<i>Ethnicity</i>						
European	69.9%	70.7%	53.0%	37.6%	77.4%	75.8%
Maori	14.1%	17.9%	35.8%	41.9%	13.7%	14.8%
Pacific peoples	5.4%	3.2%	6.2%	12.2%	1.7%	3.3%
Other	6.6%	7.2%	4.5%	7.5%	6.0%	5.8%
Unknown	4.0%	1.0%	0.6%	0.8%	1.1%	0.4%

# Chlamydia

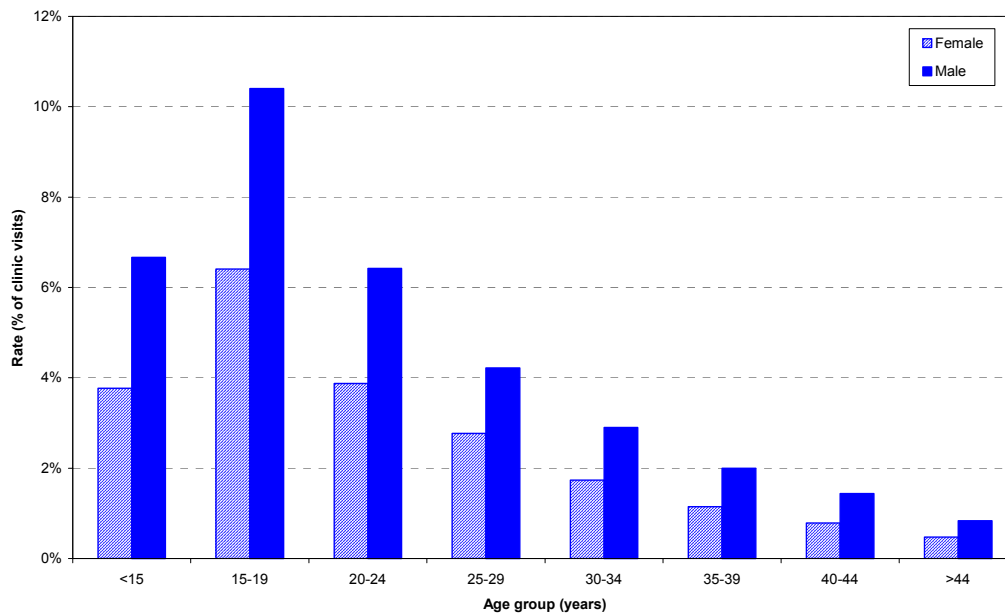
Infections caused by *Chlamydia trachomatis* are the most commonly reported bacterial STI in New Zealand. Symptoms may include vaginal discharge and/or dysuria in females and urethral discharge and/or dysuria in males. Chlamydia is also implicated in females who present with sterile pyuria. However, up to 80% of chlamydial infections in females and up to 50% in males are asymptomatic, which means that the true number of infected people is likely to be much higher than the cases reported. Infection in females may progress to pelvic inflammatory disease (PID), which is a major cause of chronic pelvic pain, infertility, and ectopic pregnancy. In men, infection can progress to epididymitis and in some instances, infertility. Another important but uncommon complication that occurs mainly in males is Reiter's syndrome (reactive arthritis, conjunctivitis and urethritis). Infants born vaginally to infected mothers can be infected during delivery, resulting in neonatal ophthalmia or pneumonia.

A total of 3372 confirmed chlamydia cases were reported by SHCs in 2002, 4% more than the 3238 cases reported in 2000. The rate of confirmed chlamydia in 2002 and 2001 was the same (4.2%). A further 628 probable cases of chlamydia were reported by SHCs in 2002. Overall, 16% of all chlamydia cases reported by SHCs during 2002 were classified as probable. If these are included in the total, chlamydia becomes the most commonly diagnosed STI at SHCs.

The majority (73%) of confirmed chlamydia cases at SHCs were aged less than 25 years. The mean age of chlamydia cases was 22.2 years and the median age was 21 years (range 13-66 years). The mean age of female cases was significantly younger than that of male cases (mean age 20.5 vs. 24.4 years;  $p < 0.0001$ ).

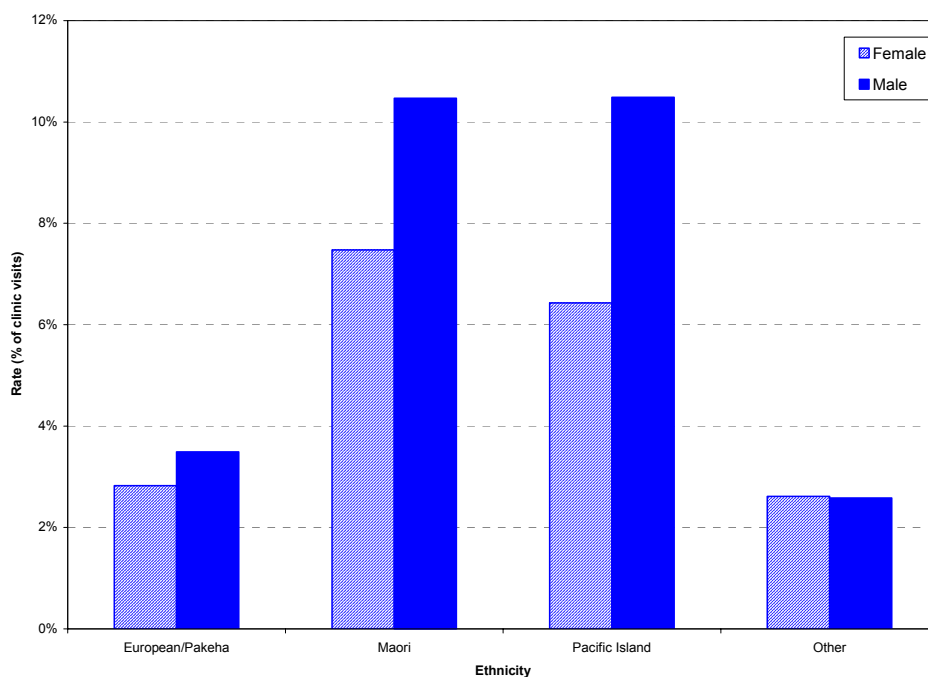
The number of confirmed chlamydia cases at SHCs was highest in the 15-19 year-old age group (40%), followed by the 20-24 year-old age group (31%). Rates of chlamydia were highest in SHC attendees aged 15-19 years (7.1%), followed by those aged 20-24 years (4.9%) (Figure 3).

**Figure 3. Rates of confirmed chlamydia at SHCs by age group and sex: 2002**



Of the 3372 SHC attendees diagnosed with confirmed chlamydia, 1786 (52%) were European, 1206 (36%) were Maori and 208 (6%) were Pacific peoples. However, as shown in Figure 4, rates of chlamydia at SHCs were considerably higher in Pacific peoples (8.1%) and Maori (8.3%) than in Europeans (3.1%).

**Figure 4. Rates of confirmed chlamydia at SHCs by ethnicity and sex: 2002**



### ***Chlamydia: Site of infection***

Of the 3372 confirmed chlamydial infections during 2002 at SHCs, 3254 (96.5%) were uncomplicated lower anogenital infections, 103 (3%) were complicated infections (PID in females and epididymitis in males), and 20 (0.5%) were uncomplicated extra-genital infections. Five SHC attendees were diagnosed with confirmed chlamydial infections at multiple sites (lower anogenital and other site).

Of the 103 SHC attendees with complicated chlamydial infections, 67 (65%) were females diagnosed with PID and 36 (35%) were males diagnosed with epididymitis. Sixty-nine percent of clinic attendees diagnosed with PID or epididymitis were aged less than 25 years. Europeans accounted for 50% of complicated chlamydia cases, Maori 37% and Pacific peoples 7%. There was a no significant difference in the mean age of SHC attendees with complicated chlamydial infections versus uncomplicated chlamydial infections (22.2 vs. 22.7 years).

## Chlamydia: Trends 1996-2002

The number of confirmed chlamydia cases reported by SHCs increased each year from 1996 to 2002, with an overall increase of 103%. As shown in Table 5, the increase in chlamydia cases between 1996 and 2002 occurred in all age, sex and ethnic groups. During this period, the percentage of total chlamydia cases in each age, sex and ethnic group remained relatively constant, suggesting that the increase was similar across all groups.

**Table 5. Chlamydia trends at SHCs by age group, sex and ethnicity: 1996-2002**

	1996 <sup>1</sup>		1997		1998		1999		2000		2001		2002	
	No	% <sup>2</sup>	No	%	No	%	No	%	No	%	No	%	No	%
<b>Age group<sup>3</sup></b>														
<15 years	14	1	22	1	22	1	27	1	35	1	64	2	48	1
15-19 years	611	37	665	33	776	34	770	33	977	34	1204	37	1356	40
20-24 years	640	38	769	39	871	38	833	36	1040	36	1108	34	1061	32
25-29 years	184	11	297	15	320	14	399	17	455	16	464	14	507	15
30-39 years	156	9	189	9	214	9	239	10	273	10	301	10	316	9
40+ years	60	4	50	3	60	3	62	3	90	3	97	3	84	3
<b>Sex</b>														
Female	852	51	977	49	1206	53	1239	53	1540	54	1747	54	1889	56
Male	813	49	1015	51	1061	47	1092	47	1330	46	1491	46	1483	44
<b>Ethnicity<sup>3</sup></b>														
European	880	53	1028	53	1186	52	1211	52	1451	51	1621	50	1786	53
Maori	525	32	644	33	781	35	843	36	1041	36	1244	38	1206	36
Pacific peoples	131	8	167	9	152	7	150	6	226	8	243	8	208	6
Other	65	4	77	4	108	5	94	4	111	4	115	4	153	5
<b>Total</b>	<b>1665</b>		<b>1992</b>		<b>2263</b>		<b>2331</b>		<b>2870</b>		<b>3238</b>		<b>3372</b>	

<sup>1</sup>Age and ethnicity were not available prior to July 1996, but have been estimated for the year based on data from July-December 1996.

<sup>2</sup>Percentage of total cases in each age, sex and ethnic group.

<sup>3</sup>Because unknown age and ethnicity are not shown, the number of cases may not equal the total number of cases.

# Gonorrhoea

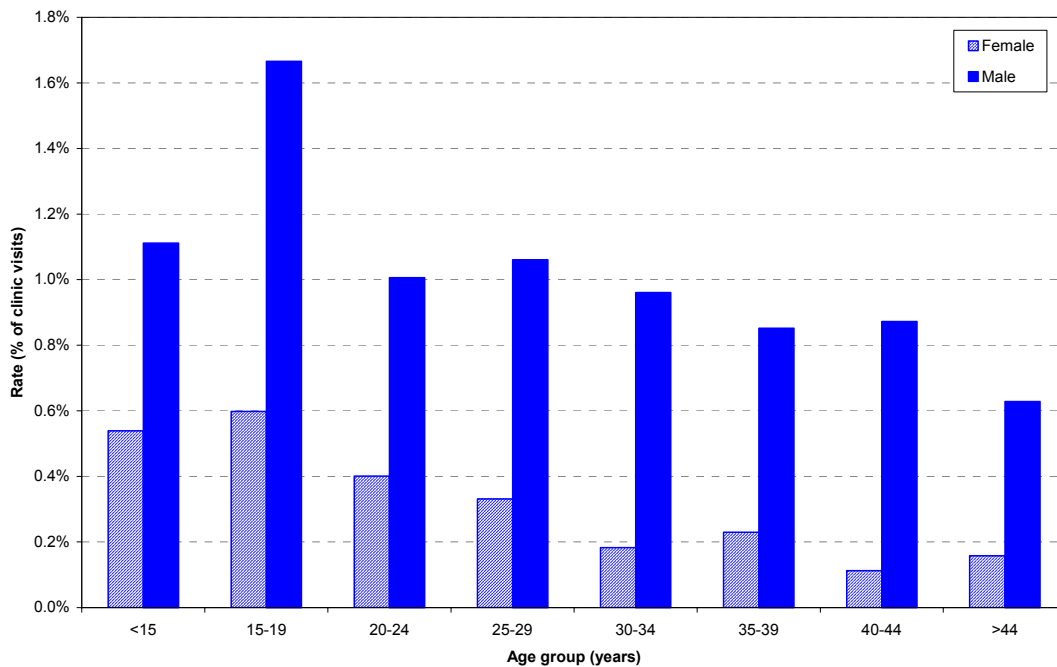
Infections due to the bacterium *Neisseria gonorrhoeae* have been increasing since the lowest annual number was reported to ESR in 1996. Symptoms may include vaginal discharge and/or dysuria in females and urethral discharge and/or dysuria in males. Infection is asymptomatic in up to 50% of females, compared with only 10% of males. Gonococcal infections may be associated with long term complications, with ascending infection a cause of PID in females, and less frequently epididymitis in males. Genital gonococcal infection is commonly accompanied by genital chlamydial infection.

A total of 532 confirmed gonorrhoea cases were reported by SHCs in 2002. The rate of confirmed gonorrhoea at SHCs in 2002 was the same as the rate in 2001 (0.7%). A further 84 probable cases of gonorrhoea were reported by SHCs in 2002. Overall, 13.6% of all gonorrhoea cases reported by SHCs during 2002 were classified as probable.

The majority (73%) of confirmed gonorrhoea cases at SHCs were aged less than 29 years. The mean age of gonorrhoea cases was 25.5 years and the median age was 23 years (range 13-60 years). The mean age of female cases was significantly younger than that of male cases (mean age 21.5 vs. 26.9 years;  $p < 0.0001$ ).

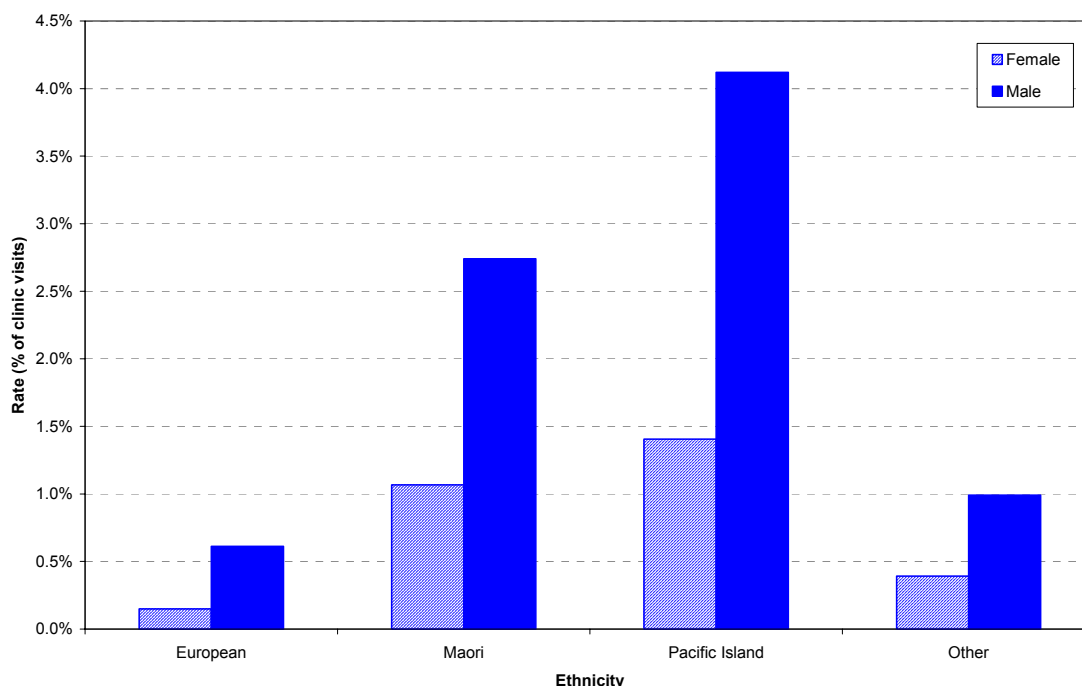
The number of confirmed gonorrhoea cases at SHCs was highest in the 15-19 year-old age group (28.2%), followed by the 20-24 year-old age group (26.1%). Rates of gonorrhoea were highest in SHC attendees aged 15-19 years (0.6%) (Figure 5).

**Figure 5. Rates of confirmed gonorrhoea at SHCs by age group and sex: 2002**



Of the 532 SHC attendees diagnosed with confirmed gonorrhoea, 22 (42%) were Maori, 200 (38%) were European and 65 (12%) were Pacific peoples. However, as shown in Figure 6, rates of gonorrhoea at SHCs were highest in Pacific peoples (1.4%), followed by Maori (1.1%) and Europeans (0.1%).

**Figure 6. Rates of confirmed gonorrhoea at SHCs by ethnicity and sex: 2002**



### **Gonorrhoea: Site of infection**

Of the 532 confirmed gonococcal infections at SHCs in 2002, 19 (3.6%) were complicated infections (PID in females and epididymitis in males) and the remainder were uncomplicated infections: 469 (88%) were urogenital, 42 (7.9%) were anorectal, 26 (4.9%) were pharyngeal, and two (0.4%) were extra-genital. Twenty-six SHC attendees had gonococcal infections at multiple sites. Anorectal infections were more common among males (19/24, 79%) than females.

Of the SHC attendees with complicated gonococcal infections, 13 (68%) were females diagnosed with PID and 6 (32%) were males diagnosed with epididymitis. The majority (73%) of SHC attendees with complicated gonococcal infections were aged less than 25 years. Thirty-two percent of clinic attendees with complicated gonococcal infections were European, 42% were Maori, and 16% were Pacific peoples. There was a significant difference in the mean age of SHC attendees with complicated gonococcal infections versus uncomplicated gonococcal infections (21.3 vs. 25.7 years;  $p < .0001$ ).

## Gonorrhoea: Trends 1996-2002

Between 1996 and 2002, the number of confirmed gonorrhoea cases at SHCs increased by 94%, from 274 to 532 (Table 6). During 2002 there has been a similar number of Gonorrhoea cases compared to last year. It is worth mentioning the decrease in both the 20-24 year age group and in females as a whole. The percentage of cases in each ethnic group remains stable compared to previous years. The greater number of cases occurred among Maori (42%) and European (38%)

**Table 6. Gonorrhoea trends at SHCs by age group, sex and ethnicity: 1996-2002**

	1996 <sup>1</sup>		1997		1998		1999		2000		2001		2002	
	No	% <sup>2</sup>	No	%	No	%	No	%	No	%	No	%	No	%
<b>Age group<sup>3</sup></b>														
<15 years	1	0.3	5	2	3	1	10	3	5	1	7	1	7	1
15-19 years	51	17	98	34	115	35	128	33	180	37	156	29	150	28
20-24 years	39	14	91	31	98	30	126	33	154	31	171	32	139	26
25-29 years	25	9	48	16	45	14	60	16	72	15	82	15	100	19
30-39 years	12	4	37	13	42	13	36	9	58	12	81	15	90	17
40+ years	10	4	12	4	26	8	24	6	22	4	36	7	46	9
<b>Sex</b>														
Female	46	17	125	43	147	45	172	45	220	45	215	40	196	37
Male	92	34	166	57	182	55	212	55	271	55	318	60	336	63
<b>Ethnicity<sup>3</sup></b>														
European	46	17	104	36	97	29	100	26	140	29	202	38	200	38
Maori	49	18	124	43	169	51	204	53	245	50	220	41	223	42
Pacific peoples	28	10	39	13	40	12	55	14	78	16	76	14	65	12
Other	4	1	12	4	19	6	19	5	18	4	34	6	40	8
<b>Total</b>	<b>274</b>		<b>291</b>		<b>329</b>		<b>384</b>		<b>491</b>		<b>533</b>		<b>532</b>	

<sup>1</sup>Age and ethnicity were not available prior to July 1996, but have been estimated for the year based on data from July-December 1996.

<sup>2</sup>Percentage of total cases in each age, sex and ethnic group.

<sup>3</sup>Because unknown age and ethnicity are not shown, the number of cases may not equal the total number of cases.

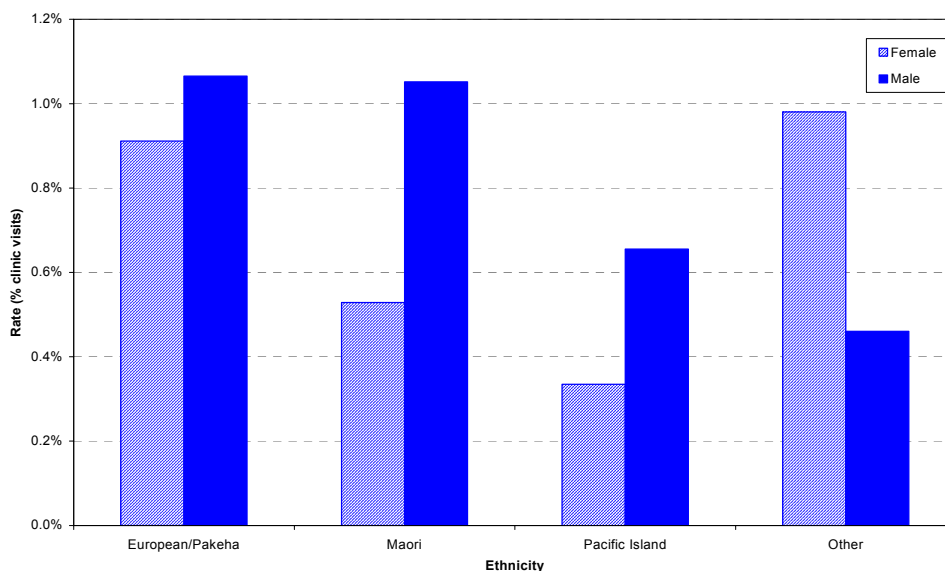
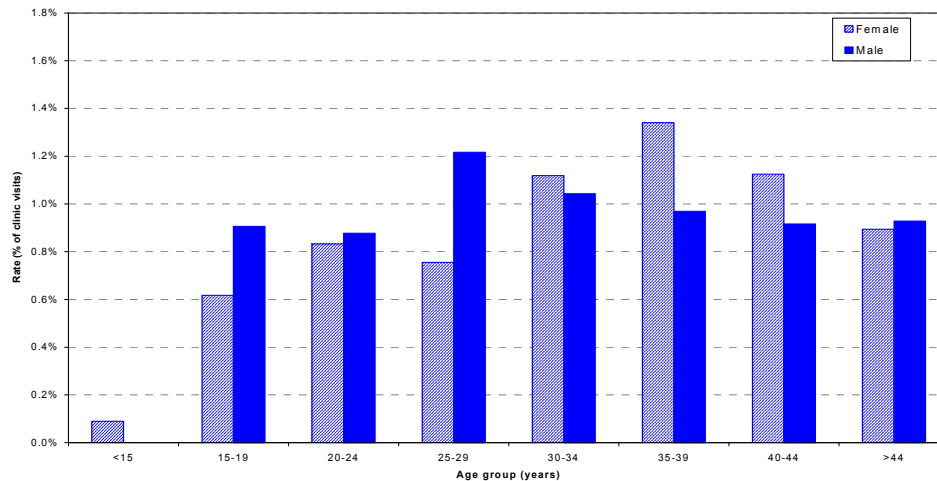
## Genital Herpes (1<sup>st</sup> diagnosis)

Genital herpes can result from infection with either herpes simplex virus type 1 (HSV-1) or type 2 (HSV-2). HSV-2 is traditionally regarded as the primary cause of genital infections, and HSV-1 is mainly associated with oral infection. However, over recent years HSV-1 has been increasingly associated with genital infection. While asymptomatic transmission is common, symptomatic primary episodes may present as painful anogenital blistering lesions. Recurrent ulcerative episodes are common but are usually milder. For females who acquire genital herpes in pregnancy, there is a risk of potentially fatal neonatal infection.

A total of 713 genital herpes cases were reported by SHCs in 2002, 75 more than the 638 cases reported in 2001. The rate of genital herpes at SHCs in 2002 was not significantly different from the rate in 2001 (0.9% vs. 0.8%). The mean age of genital herpes cases at SHCs in 2002 was 28 years and the median age was 26 years (range 13-65 years). The mean age of female cases was significantly younger than that of male cases (mean age 26.5 vs. 30.1 years;  $p < 0.0001$ ).

Almost half (46%) of all genital herpes cases at SHCs were aged 20-29 years. However, the highest rates of genital herpes at SHCs were found in people aged 30-39 years (1.2%) (Figure 7). Of the 713 SHC attendees diagnosed with genital herpes, 552 (77%) were European, 98 (14%) were Maori and 12 (1.7%) were Pacific peoples. Rates of genital herpes were considerably higher in Europeans (1.0%) than in Maori (0.7%) and Pacific peoples (0.5%).

**Figure 7. Rates of genital herpes at SHCs by age group and sex: 2002**



**Figure 8. Rates of genital herpes at SHCs by ethnicity and sex: 2002**

## Genital Herpes: Trends 1996-2002

Between 1996 to 2002, the number of genital herpes cases reported by SHCs decreased by 11.1%, from 802 to 713 (Table 7). Most of this decrease occurred between 1996 and 1997, after which the number of genital herpes cases experienced yearly fluctuations.

**Table 7. Genital herpes trends at SHCs by age group, sex and ethnicity: 1996-2002**

	1996 <sup>1</sup>		1997		1998		1999		2000		2001		2002	
	No	% <sup>2</sup>	No	%	No	%	No	%	No	%	No	%	No	%
<b>Age group<sup>3</sup></b>														
<15 years	0	0	3		2	0	1	0	2	0	0	0	1	0
15-19 years	119	15	113	16	69	10	67	10	79	12	88	14	127	18
20-24 years	249	31	198	28	221	31	184	27	177	27	168	26	185	26
25-29 years	177	22	172	24	171	24	155	23	136	21	133	21	143	20
30-39 years	181	23	161	22	172	24	176	26	176	27	154	25	168	24
40+ years	77	10	72	10	89	12	99	15	88	13	95	18	41	6
<b>Sex</b>														
Female	401	50	353	49	338	47	330	50	339	52	344	54	367	52
Male	401	50	366	51	386	53	343	50	319	48	294	46	297	48
<b>Ethnicity<sup>3</sup></b>														
European	687	86	591	82	580	80	547	80	527	80	494	77	510	72
Maori	76	9	69	10	93	13	73	11	80	12	89	14	92	13
Pacific peoples	21	3	11	2	13	2	13	2	8	1	6	1	12	2
Other	17	2	22	3	27	4	38	6	34	5	43	7	43	6
<b>Total</b>	<b>802</b>		<b>719</b>		<b>724</b>		<b>682</b>		<b>658</b>		<b>638</b>		<b>713</b>	

<sup>1</sup>Age and ethnicity were not available prior to July 1996, but have been estimated for the year based on data from July-December 1996.

<sup>2</sup>Percentage of total cases in each age, sex and ethnic group.

<sup>3</sup>Because unknown age and ethnicity are not shown, the number of cases may not equal the total number of cases.

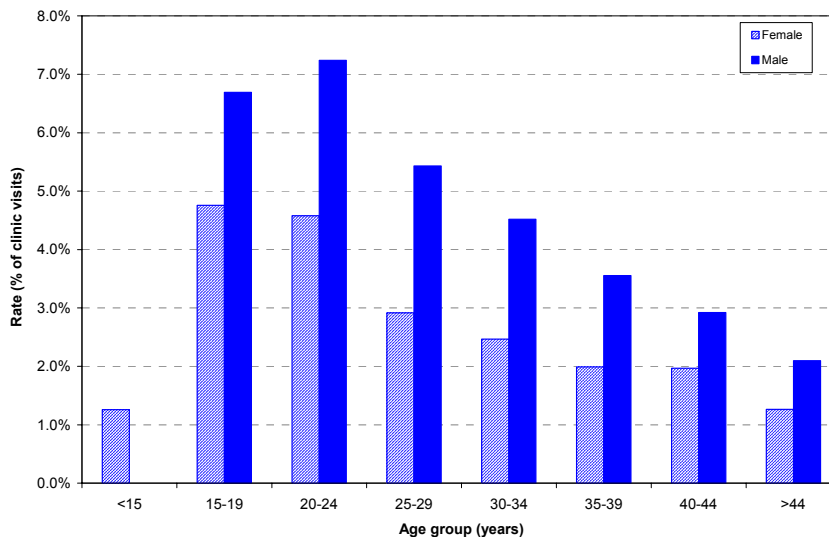
## Genital Warts (1<sup>st</sup> diagnosis)

Human papillomavirus (HPV) is the most commonly reported STI in New Zealand. Most HPV infections are sub-clinical and asymptomatic. While clinical manifestations are usually benign visible skin lesions, these can cause substantial discomfort and psychological distress. There are over 80 HPV types, with most visible anogenital warts caused by HPV types 6 and 11. However, patients may also be infected with oncogenic “high risk” HPVs such as types 16 and 18, which are associated with cervical cancer.

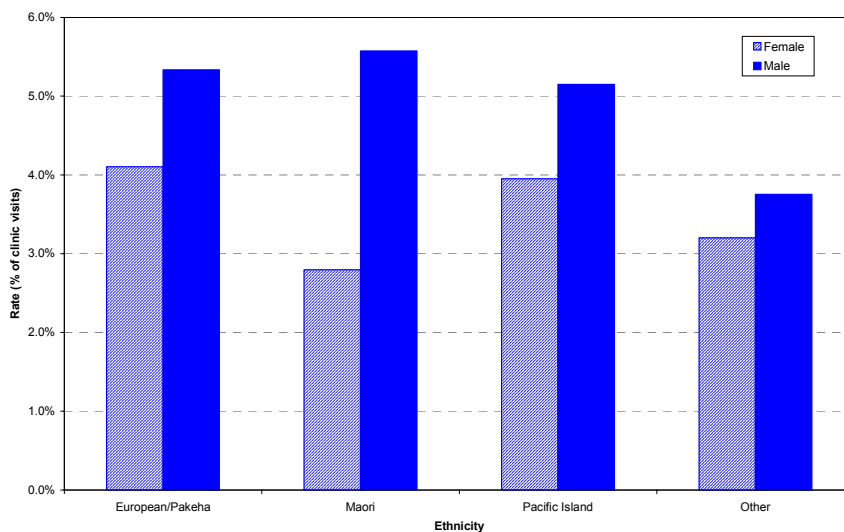
A total of 3510 genital warts cases were reported by SHCs in 2002, 6.2% more than the 3304 cases reported in 2001. The rate of genital warts at SHCs in 2002 was the same as in 2001 (4.3%). The majority (63%) of genital warts cases were aged less than 25 years. The mean age for genital warts cases was 24.5 years and the median age was 22 years (range 13-68 years). Female cases were significantly younger than male cases (mean age 22.7 vs. 26. years;  $p < 0.0001$ ).

The number of genital warts cases at SHCs was highest in the 20-24 year-old age group (35%), followed by the 15-19 year-old age group (28%). Rates of genital warts were highest in SHC attendees aged 20-24 years (5.6%), followed by those aged 15-19 years (5.1%) (Figure 9). Of the 3510 SHC attendees diagnosed with genital warts, 2659 (76%) were European, 519 (15%) were Maori and 114 (3%) were Pacific peoples. Rates of genital warts were similar in Europeans (4.6%), Pacific peoples (4.5%), and Maori (3.6%) (Figure 10).

**Figure 9. Rates of genital warts at SHCs by age group and sex: 2002**



**Figure 10. Rates of genital warts at SHCs by ethnicity and sex: 2002**



## Genital Warts: Trends 1996-2002

Between 1996 and 2002, the number of genital warts cases at SHCs decreased by 4%, from 3660 to 3510. However, case numbers have been increasing over the 2000-2002 period; an increase of 3% was noted in 2000 (compared to 1999), 4% in 2001 (compared to 2000) and 6% in 2002 (compared to 2001).

As shown in Table 8, the distribution of cases expressed as a percentage for age, sex and ethnicity remain stable across the period.

**Table 8. Genital warts trends at SHCs by age group, sex and ethnicity: 1996-2002**

	1996 <sup>1</sup>		1997		1998		1999		2000		2001		2002	
	No	% <sup>2</sup>	No	%	No	%	No	%	No	%	No	%	No	%
<b>Age group<sup>3</sup></b>														
<15 years	8	0	10	0	12	0	10	0	10	0	11	0	14	0
15-19 years	964	26	909	25	842	25	758	25	794	25	874	26	969	28
20-24 years	1446	40	1488	40	1315	38	1166	38	1143	36	1149	35	1224	35
25-29 years	638	17	665	18	654	19	573	19	623	20	603	18	604	17
30-39 years	464	13	471	13	463	13	418	14	411	13	467	14	502	14
40+ years	140	4	148	4	147	4	155	5	200	6	200	6	196	6
<b>Sex</b>														
Female	1869	51	1842	50	1666	49	1533	50	1619	51	1706	52	1799	51
Male	1791	49	1848	50	1768	51	1550	50	1562	49	1598	48	1711	49
<b>Ethnicity<sup>3</sup></b>														
European	2828	77	2821	76	2623	76	2344	76	2391	75	2555	77	2659	76
Maori	549	15	536	15	522	15	453	15	495	16	492	15	519	15
Pacific peoples	107	3	105	3	108	3	89	3	102	3	98	3	114	3
Other	79	2	87	2	84	2	115	4	135	4	145	4	204	6
<b>Total</b>	<b>3660</b>		<b>3691</b>		<b>3434</b>		<b>3083</b>		<b>3181</b>		<b>3304</b>		<b>3510</b>	

<sup>1</sup>Age and ethnicity were not available prior to July 1996, but have been estimated for the year based on data from July-December 1996.

<sup>2</sup>Percentage of total cases in each age, sex and ethnic group.

<sup>3</sup>Because unknown age and unknown ethnicity are not shown, the number of cases may not equal the total number of cases.

## Infectious Syphilis

Syphilis is transmitted by the spirochaete *Treponema pallidum*. The first stage of the disease presents as an ulcerative infection that spontaneously heals. If untreated, secondary syphilis will develop in two to eight weeks, and one-third of cases will progress to tertiary syphilis some years later. Untreated early syphilis during pregnancy may result in perinatal death and, if acquired during the four years preceding pregnancy, may lead to infection of the foetus. Only cases of infectious syphilis (primary, secondary and early latent) are reported by clinics for surveillance purposes.

A total of 47 syphilis cases were reported by SHCs in 2002, 29 (161%) more than were reported in 2001. This great increase is worrying and needs to be carefully followed up. The rate of syphilis at SHCs in 2002 was significantly different to the rate in 2001 (0.06% vs. 0.02%;  $p < 0.05$ ).

The mean and median ages of syphilis cases were 40 and 37 years, respectively (range 19-71 years). Of the 47 syphilis cases reported in 2002, twenty-eight (60%) were male and nineteen (40%) were female. There was no significant difference in the mean age of male and female syphilis cases (39.2 vs. 41 years).

Of the twenty-eight male SHC attendees with syphilis eleven were European, one was Maori, five were Pacific peoples and eleven had their ethnicity classified as Other. Of the nineteen females with syphilis, one was European, seven were Pacific peoples, and eleven had their ethnicity classified as Other.

## NSU (males only)

For surveillance purposes, non-specific urethritis is reported in males only, and is defined as the presence of a urethral discharge where a laboratory confirmed or probable diagnosis of chlamydia or gonorrhoea has been excluded.

A total of 1124 cases of NSU in males were reported by SHCs in 2002, 7% more than the 1053 cases reported in 2001. The rate of NSU at SHCs in 2002 (3.4%) was the same as the rate in 2001. The mean and median ages for NSU cases were 29.5 and 27 years, respectively (range 15-74 years). Rates of NSU were similar in all age groups, ranging from 3.2% to 3.7%. NSU rates at SHCs were similar in Europeans (3.4%) and Maori (3.4%).

## Multiple Infections

Some SHC attendees are diagnosed with more than one STI during the same year. Multiple STIs can be diagnosed at the same time (ie, in the same month) or at different times (ie, in two or more months of the same year). Multiple STIs that are diagnosed at the same time are referred to as concurrent infections (eg, both gonorrhoea and chlamydia in March). Multiple STIs that are diagnosed at different times are referred to as subsequent infections. Subsequent infections can be the same as the initial infection (eg, chlamydia in May and again in September) or different (eg, chlamydia in June and then genital warts in August). Some clinic attendees are diagnosed with both concurrent and subsequent infections.

To be identified as having multiple STIs, cases must have the same ID number, age, sex and ethnicity. If any of these details are recorded incorrectly or inconsistently, people with multiple STIs may not be identified. The data presented below underestimate the true number of multiple infections, particularly subsequent infections, due to inconsistent recording of a patient's details during different visits and because they do not take into account diagnoses made in a different year.

### Concurrent Infections

If a patient has concurrent infections it means they have been diagnosed with more than one STI in the same month. In 2001, 10.8% of SHC attendees were diagnosed with concurrent infections. Of those with concurrent infections, 501 (5.7%) were diagnosed with two infections in the same month, and ten (0.1%) were diagnosed with three infections in the same month.

Of SHC patients diagnosed with confirmed chlamydia, 421 (12.5%) were diagnosed with more than one infection: 412 (12.2%) had two infections and nine (0.3%) had three infections (Table 9). Gonorrhoea and genital warts were the most common STI diagnosed in combination with chlamydia.

**Table 9. Confirmed chlamydia with other STIs at SHCs: 2002**

Combinations	Number of cases	Percent of total
Chlamydia only	2950	87.5%
Chlamydia/Gonorrhoea	169	5.0%
Chlamydia/Genital herpes	25	0.7%
Chlamydia/Genital warts	213	6.3%
Chlamydia/Syphilis	3	0.1%
Chlamydia/NSU	2	0.1%
Chlamydia/Gonorrhoea/Genital warts	8	0.3%
Chlamydia/Genital herpes/Genital warts	1	0.0%
<b>Total Chlamydia (confirmed)</b>	<b>3371</b>	<b>100%</b>

Of SHC patients diagnosed with confirmed gonorrhoea, 188 (35.4%) were diagnosed with more than one infection: 180 (33.9%) had two infections and eight (1.5%) had three infections (Table 10). Chlamydia was the most common STI diagnosed in combination with gonorrhoea.

**Table 10. Confirmed gonorrhoea with other STIs at SHCs: 2002**

Combinations	Number of cases	Percent of total
Gonorrhoea only	343	64.6%
Gonorrhoea/Chlamydia	169	31.8%
Gonorrhoea/Genital herpes	4	0.8%
Gonorrhoea/Genital warts	4	0.8%
Gonorrhoea/NSU	3	0.5%
Gonorrhoea/Chlamydia/Genital warts	8	1.5%
<b>Total Gonorrhoea (confirmed)</b>	<b>531</b>	<b>100%</b>

Of SHC patients diagnosed with genital herpes, 56 (7.9%) were diagnosed with more than one infection: 55 (7.7%) had two infections and one (0.1%) had three infections (Table 11). Genital warts was the most common STI diagnosed in combination with genital herpes, followed by chlamydia.

**Table 11. Genital herpes with other STIs at SHCs: 2002**

Combinations	Number of cases	Percent of total
Genital herpes only	656	92.1%
Genital herpes/Chlamydia	25	3.5%
Genital herpes/Gonorrhoea	4	0.6%
Genital herpes/Genital warts	15	2.1%
Genital herpes/NSU	11	1.6%
Genital herpes/Genital warts/ Chlamydia	1	0.1%
<b>Total Genital herpes</b>	<b>712</b>	<b>100%</b>

Of SHC patients diagnosed with genital warts, 292 (8.3%) were diagnosed with more than one infection: 283 (8%) had two infections and nine (0.3%) had three infections (Table 12). Chlamydia was the most common STI diagnosed in combination with genital warts.

**Table 12. Genital warts with other STIs at SHCs: 2002**

Combinations	Number of cases	Percent of total
Genital warts only	3,218	91.7%
Genital warts/Chlamydia	213	6.1%
Genital warts/Gonorrhoea	4	0.1%
Genital warts/Genital herpes	15	0.5%
Genital warts/NSU	51	1.4%
Genital warts/Chlamydia/Gonorrhoea	8	0.2%
Genital warts/Chlamydia/Genital herpes	1	0.0%
<b>Total Genital warts</b>	<b>3,510</b>	<b>100%</b>

Of SHC patients diagnosed with syphilis, 5 (10.6%) were diagnosed with more than one infection: 4 (8.5%) had two infections and one (2.1%) had three infections (Table 13).

**Table 13. Syphilis in other STIs at SHCs: 2002**

Combinations	Number of cases	Percent of total
Syphilis only	42	89.4%
Syphilis/Chlamydia	3	6.4%
Syphilis/Herpes	1	2.1%
Syphilis/Chlamydia/Gonorrhoea	1	2.1%
<b>Total Syphilis</b>	<b>47</b>	<b>100%</b>

Of SHC patients diagnosed with NSU, 67 (6.0%) were diagnosed with two infections (Table 14). Genital warts was the most common STI diagnosed in combination with NSU.

**Table 14. NSU in other STIs at SHCs: 2002**

Combinations	Number of cases	Percent of total
NSU only	1057	94.0%
NSU/Genital warts	51	4.5%
NSU/Genital herpes	11	1.0%
NSU/Gonorrhoea	3	0.3%
NSU/Chlamydia	2	0.2%
<b>Total NSU (males only)</b>	<b>1,124</b>	<b>100%</b>

As shown in Table 15, SHC patients diagnosed with two or more infections were more likely to be aged less than 20 years than patients diagnosed with only one infection.

**Table 15. Number of STIs at SHCs by age group: 2002**

Age group	Number (%) of STI infections			
	One		Two or more	
<15 years	49	0.6%	8	1.6%
15-19 years	2,289	27.7%	210	41.1%
20-24 years	2,626	31.8%	155	30.3%
25-29 years	1,444	17.4%	82	16.0%
30-34 years	817	9.9%	22	4.3%
35-39 years	453	5.5%	19	3.7%
40-44 years	280	3.4%	7	1.4%
45+ years	308	3.7%	8	1.6%
<b>Total</b>	<b>8266</b>	<b>(100%)</b>	<b>511</b>	<b>(100%)</b>

Compared to SHC patients with one infection, there was no significant difference between female and male patients being diagnosed with two or more STIs.

**Table 16. Number of STI infections at SHCs by sex: 2002**

Sex	Number (%) of STI infections			
	One		Two or more	
Female	3,799	(45.9%)	243	(47.6%)
Male	4,467	(54.1%)	268	(52.4%)
<b>Total</b>	<b>8266</b>	<b>(100%)</b>	<b>511</b>	<b>(100%)</b>

Compared to SHC patients with one infection, patients diagnosed with two or more infections were more likely to be Maori or Pacific peoples (Table 17). Multiple infection rates are Maori 9.2% vs. Pacific Island 12.6% vs. European 4.4% vs. Other 3.8%.

**Table 17. Number of STI infections at SHCs by ethnicity: 2002**

Ethnicity	Number (%) of STI infections			
	One		Two or more	
European	5,533	66.9%	252	49.3%
Maori	1,826	22.1%	185	36.2%
Pacific peoples	360	4.4%	52	10.2%
Other	500	6.0%	20	3.9%
Unknown	47	0.6%	2	0.4%
<b>Total</b>	<b>8266</b>	<b>(100%)</b>	<b>511</b>	<b>(100%)</b>

### **Subsequent Infections**

Of the 8318 SHC patients diagnosed with an STI in 2002, 437 (5.25%) were diagnosed with an STI in more than one month. Of those with subsequent infections, 417 (5%) were diagnosed with STIs in two different months, 18 (0.2%) were diagnosed in three different months and two (0.02%) were diagnosed with STIs in four different months.

Subsequent infections were more common among males, young people and among European/Pakeha and Maori peoples. Subsequent infections were diagnosed in 5.3% of male patients, compared to 5.2% of female patients. Subsequent infections were diagnosed in 5.6% of STI patients aged less than 15 years and 7.1% of patients aged 15-19 years, compared with 4.2% of patients aged 25 years and older. Subsequent infections were diagnosed in 4.8% of Pacific peoples, 6.8% of Maori and 4.9% of European.

# Family Planning Clinics

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## Clinic Attendee Demographics

From January to December 2002, the 35 Family Planning Association (FPA) clinics and three non-FPA clinics reported 198 849 clinic visits. Almost all (96%) FPC attendees were female and 64% were aged less than 25 years. Clinics were unable to provide ethnicity data for 17% of clinic attendees. Where ethnicity information was provided, 63% of clinic attendees were European, 7% were Maori, 3% were Pacific peoples, and 11% were other ethnic groups.

## STI Data

From January to December 2002, the 38 participating planning clinics reported 2281 confirmed STI cases. Overall, 1.2% of all attendees were diagnosed with an STI. Chlamydia was the most common diagnosis made at FPCs, followed by genital warts, gonorrhoea and genital herpes (Table 18).

Comparisons between FPCs and SHCs are problematic as the differences observed primarily reflect differences in attendance patterns, service provision and screening practices. The majority of clients at FPCs are female, and the treatment of STIs is only one of a range of sexual and reproductive health services FPCs provide.

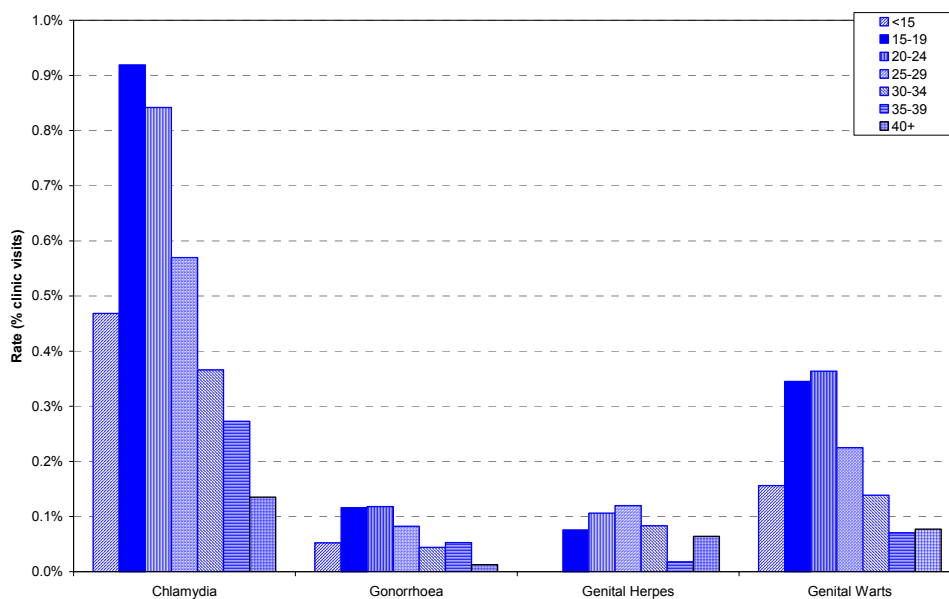
**Table 18. Confirmed STI rates and age comparisons at FPCs: January-December 2002**

Infection	Cases	Rate <sup>1</sup>	Mean age	Median age	Age range
Chlamydia	1373	0.69%	21.3	20	13-48
Gonorrhoea	184	0.09%	21.6	20	14-47
Genital herpes	170	0.09%	24.0	22	17-55
Genital warts	546	0.27%	21.6	20	14-59
Syphilis	2	<0.01%	25	25	24-26
NSU (males only)	6	<0.01%	23.3	23	16-35
<b>Total STI cases</b>	<b>2281</b>	<b>1.2%</b>			
Total clinic visits	198 849				

<sup>1</sup>Rate= (number of cases/number of clinic visits) x 100. For NSU, number of male clinic visits was used as rate denominator (7452).

For chlamydia and gonorrhoea, case numbers and rates (Figure 11) were highest in the 15-19 year-old age group, followed by the 20-24 year-old age group. For genital herpes and warts, the highest number of cases and rates were found in attendees aged 20-24 years.

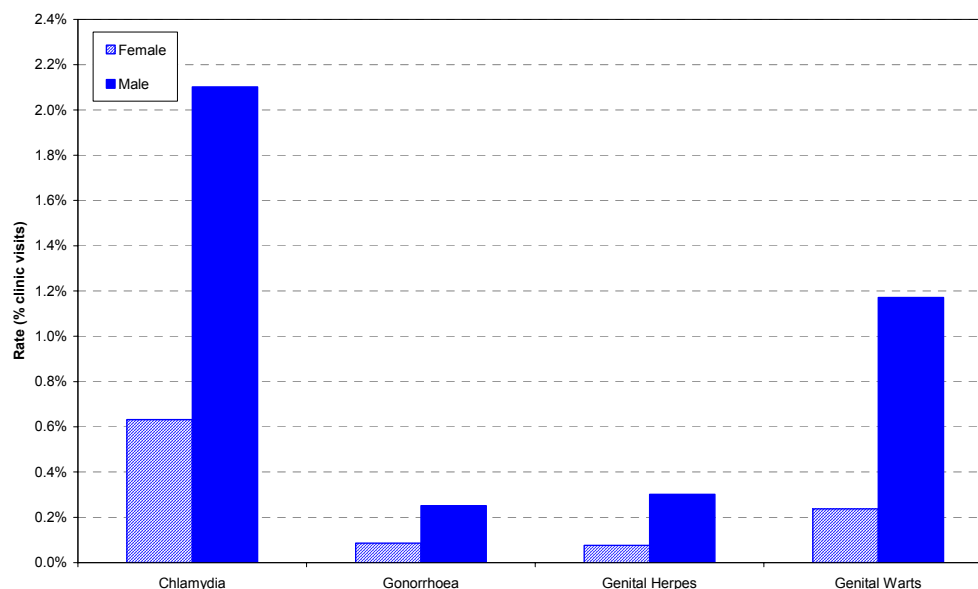
**Figure 11. Rates of confirmed STIs at FPCs by age group: January-December 2002**



Over 80% of all chlamydia, gonorrhoea, genital herpes and genital warts cases were female. However, rates of all STIs were higher in males than females (Figure 12).

The higher STI rates in males than in females probably reflects the fact that STI screens in males attending FPCs are often carried out following the diagnosis of an STI in a female partner who attended the clinic.

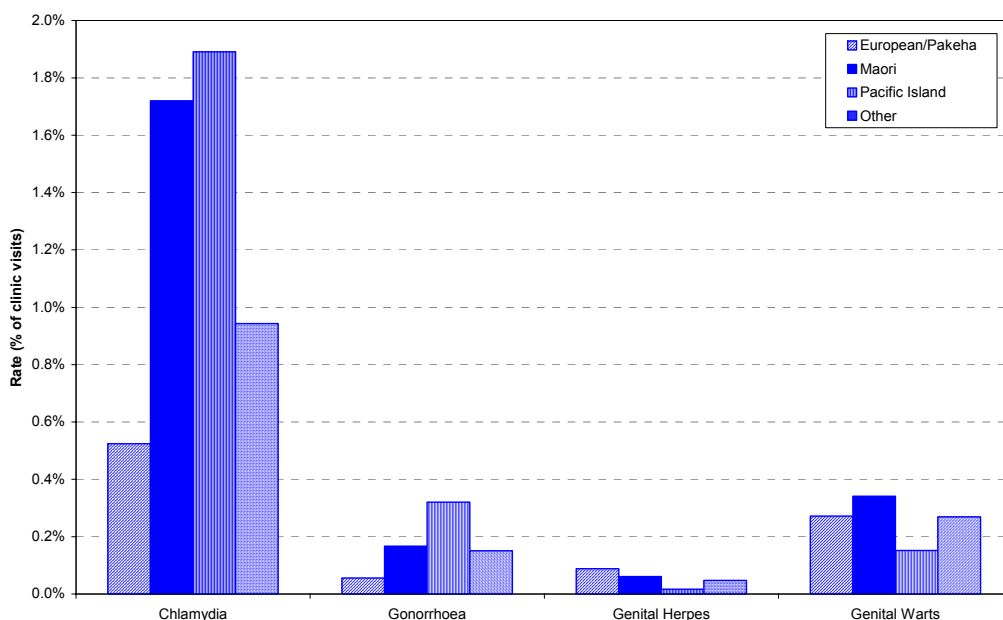
**Figure 12. Rates of confirmed STIs at FPCs by sex: January-December 2002**



Forty-eight percent of confirmed chlamydia cases at FPCs were European, 17% were Maori and 8% were Pacific peoples. However, rates of chlamydia were highest in Pacific peoples, followed by Maori (Figure 13). For gonorrhoea, 38% of cases were European, 12% were Maori and 10% were Pacific peoples. Rates of gonorrhoea were highest in Pacific peoples, followed by Maori. For genital herpes, the number of cases and rates were highest in Europeans. Europeans accounted for 62% of all genital warts cases, with highest rates in Maori and Europeans.

STI rates by ethnicity should be interpreted with caution, as ethnicity was not provided for 16% of FPC attendees.

**Figure 13. Rates of confirmed STIs at FPCs by ethnicity: January-December 2002**



# Student and Youth Health Clinics

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## Clinic Attendee Demographics

SYHCs reported 142 755 clinic visits during 2002, 71% of which were by females. Many clinics were unable to provide age and ethnicity data for clinic attendees: age was not provided for 53% of clinic attendees and ethnicity was not provided for 54% of clinic attendees. This is because these clinics do not routinely collect this information, or because they are non-computerised and collating this information manually for surveillance purposes is time-consuming. Where age and ethnicity information were provided, 71% were aged less than 25 years, 68% were Europeans, 16% were Maori, 3% were Pacific peoples and 13% were other ethnic groups.

## STI Data

SYHCs reported 531 confirmed STI cases in 2002. Of all attendees, 0.4% were diagnosed with an STI. Chlamydia was the most common diagnosis, followed by genital warts, genital herpes, and gonorrhoea (Table 19).

The low infection rate at SYHCs compared with SHCs and FPCs occurs because STI diagnosis and treatment is only one of a wide range of health services provided by SYHCs.

**Table 19. Confirmed STI rates and age comparisons at SYHCs: 2002**

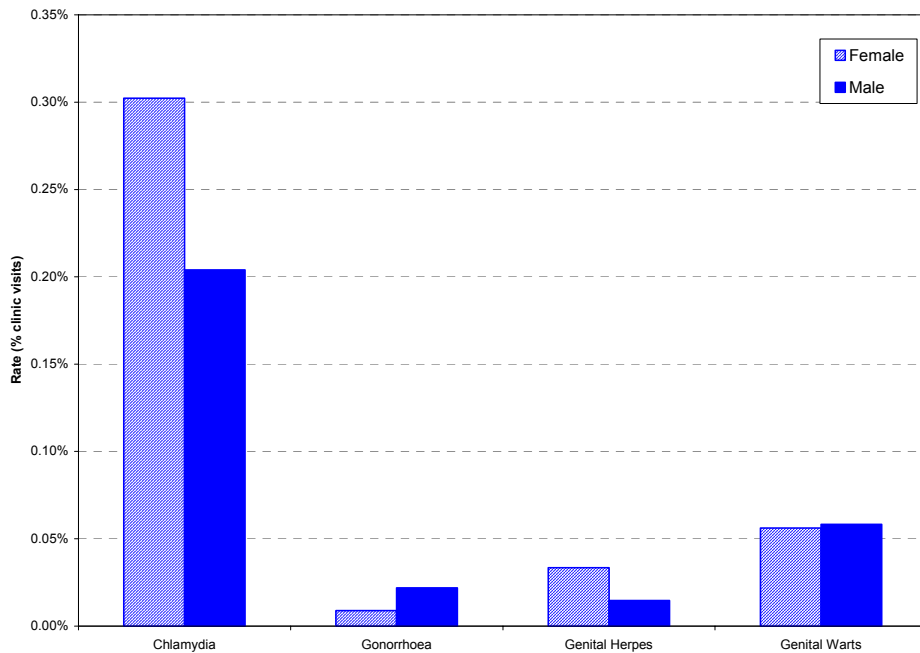
Infection	Cases	Rate <sup>1</sup>	Mean age	Median age	Age range
Chlamydia	391	0.27%	20.5	20	12-50
Gonorrhoea	18	0.01%	21.5	19.5	16-33
Genital herpes	40	0.03%	20.5	21	17-30
Genital warts	81	0.06%	21.2	21	14-39
Syphilis	0	-	-	-	-
NSU	1	<0.01%	18	18	19-20
<b>Total STI cases</b>	<b>531</b>	<b>0.37%</b>			
Total clinic visits	142 755				

<sup>1</sup>Rate= (number of cases/number of clinic visits) x 100. For NSU, number of male clinic visits was used as rate denominator (41172).

Over 74% of all STI cases at SYHCs were female. Rates of chlamydia, genital herpes and genital warts were higher in females than in males (Figure 14). Rates of gonorrhoea were similar in males and females.

The higher rates of chlamydia, genital herpes and genital warts in females compared with males may reflect more selective screening of females in SYHCs.

**Figure 14. Rates of confirmed STIs at SYHCs by sex: 2002**

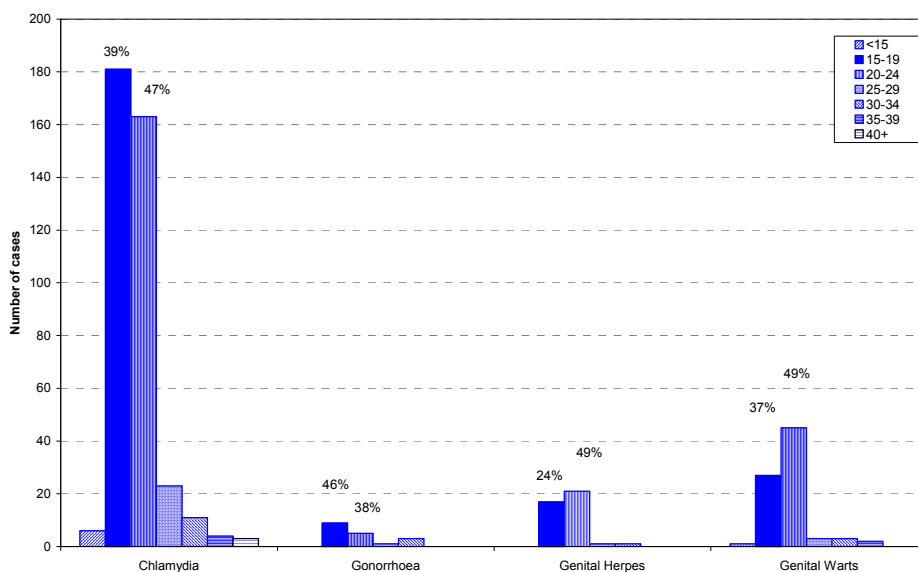


**Note: Case numbers, not infection rates, have been presented in Figures 15 and 16.** While student and youth clinics almost always provided the age and ethnicity of their cases (the numerator), some could not provide the age and/or ethnicity of all their clinic attendees (the denominator), and therefore STI rates by age and ethnicity would be unreliable.

Figure 15 shows the number and percentage of cases at SYHCs by age group for each STI. For example, of the 391 confirmed chlamydia cases, 47% were aged 20-24 years. For all STIs, over 85% of cases were aged 15-19 or 20-24 years.

The high case numbers in these age groups largely reflects the fact that 71% of SYHC attendees of known age are aged 15 to 24 years.

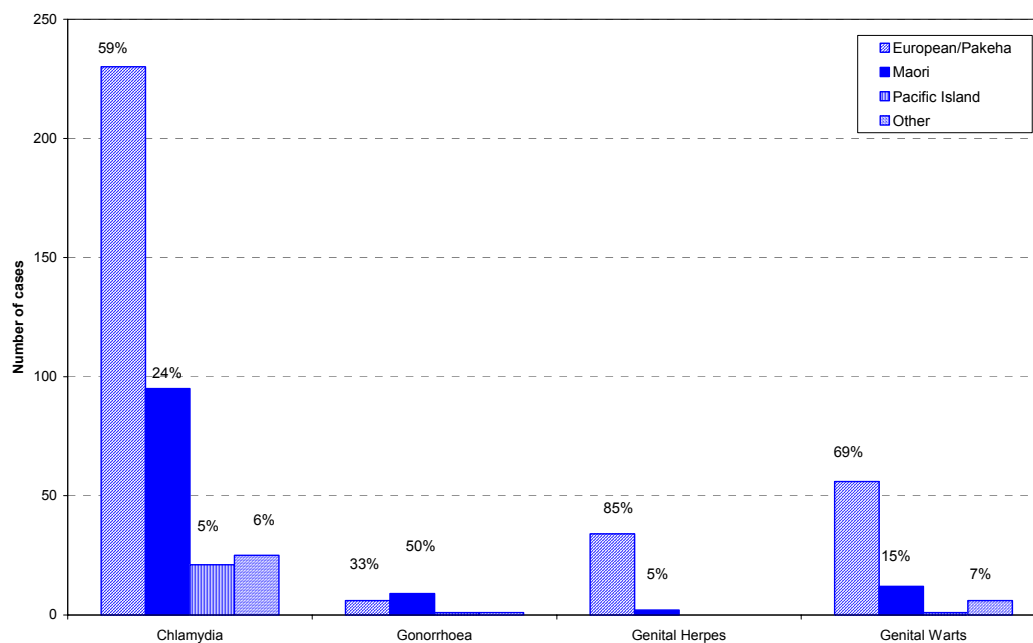
**Figure 15. STI cases at SYHCs by age group: 2002**



The majority of chlamydia, genital herpes and genital warts cases at SYHCs were European (Figure 16). For gonorrhoea, the majority of cases were Maori.

The high case numbers in the European ethnic group reflects the higher attendance for this group, and infection rates will not necessarily follow the same pattern. For example, for chlamydia, while the number of STIs in Maori was approximately half the number in Europeans, only 16% of clinic attendees of known ethnicity were Maori whereas 68% were European. This suggests that chlamydia rates at SYHCs would be higher in Maori than in Europeans.

**Figure 16. STI cases at SYHCs by ethnicity: 2002**



# Laboratory Surveillance

## Chlamydia

### Waikato and Bay of Plenty

During 2002, laboratories in Waikato and BOP tested 43,072 specimens for chlamydia, and reported 3856 (8.3%) positive cases. Females accounted for 75% of all cases. The mean age of chlamydia cases was 21.4 years (median age 20, range 0-71 years). Seventy-five per cent of all chlamydia cases were aged 15-24 years. One hundred and thirty one cases of chlamydia were reported in people aged less than 15 years; of these, 92 were teenagers aged 12 to 14 years, and 36 were infants aged less than 12 months.

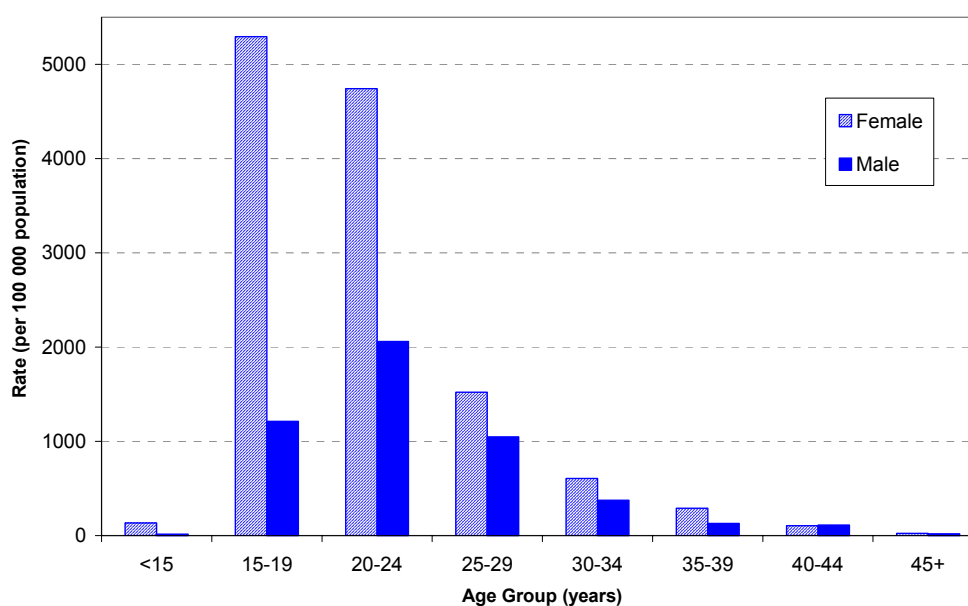
**Table 20. Case numbers and rates of chlamydia in Waikato/BOP by age group and sex: 2002**

Age group	Number of cases				Rate per 100 000		
	Female	Male	Unknown	Total	Female	Male	Total
<15 years	105	20	6	131	161	29	98
15-19 years	1346	279	1	1626	6998	1368	4104
20-24 years	877	372	0	1249	5424	2315	3874
25-29 years	306	142	0	448	1751	885	1336
30-39 years	211	102	0	313	502	272	393
40+ years	40	45	0	85	41	41	37
Unknown	1	0	3	4			
<b>Total</b>	<b>2886</b>	<b>960</b>	<b>10</b>	<b>3856</b>	<b>1024</b>	<b>356</b>	<b>699</b>

Rates of chlamydia in females in the Waikato and BOP were almost three times higher than rates in males (Table 20). The highest rates of chlamydia were in females aged 15-19 years, followed by females aged 20-24 years (Figure 17).

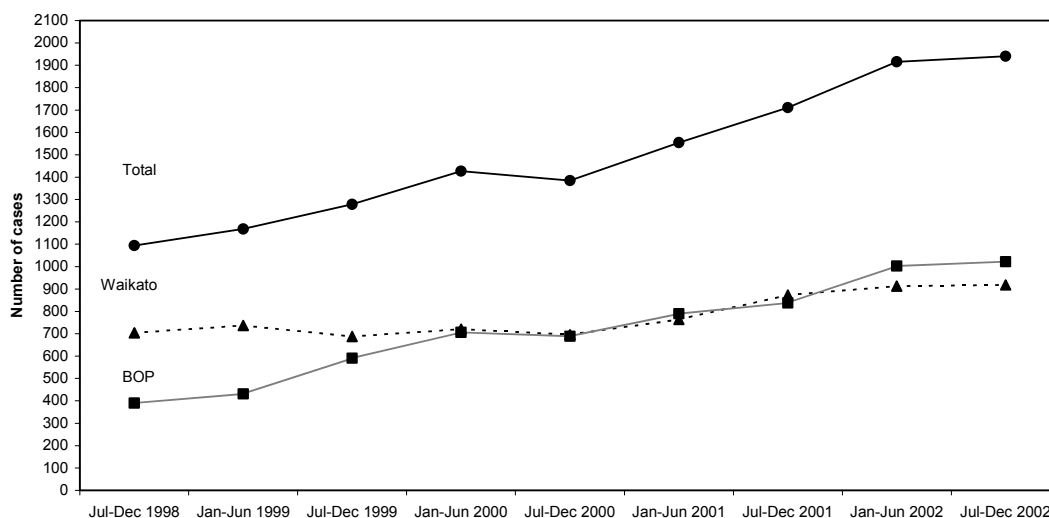
Because the majority of chlamydial infections are asymptomatic, rates calculated using laboratory data reflect the screening practises of clinicians rather than true disease incidence.

**Figure 17. Rates of chlamydia in Waikato/BOP by age group and sex: 2002**



Although there was a small decrease in cases during the second half of 2000 compared to previous rising figures from July 1998, chlamydia cases continued to increase in number in 2002 (Figure 18). The total number of chlamydia cases reported in 2002 was 18% higher than the number reported in 2001 (3856 vs. 3265).

**Figure 18. Trends in chlamydia in Waikato/BOP: July 1998 - December 2002**



The increase in the number of chlamydia cases from July 1998 to early 2000 occurred almost exclusively in the BOP. This increase is primarily due to laboratories in this region gradually moving to more sensitive nucleic acid amplification tests (NAAT). In the BOP, the switch to DNA amplification testing occurred mostly in 1999, after which the number of cases reported increased. In the Waikato, where the number of laboratories using NAAT has not changed since data were first collated in mid-1998, there has been no real change in the number of chlamydia cases reported. Some of the increase in chlamydia is explained by an increase in the number of specimens tested, with numbers increasing 32% between 1999 and 2002, from 32,721 to 43,072.

## Auckland

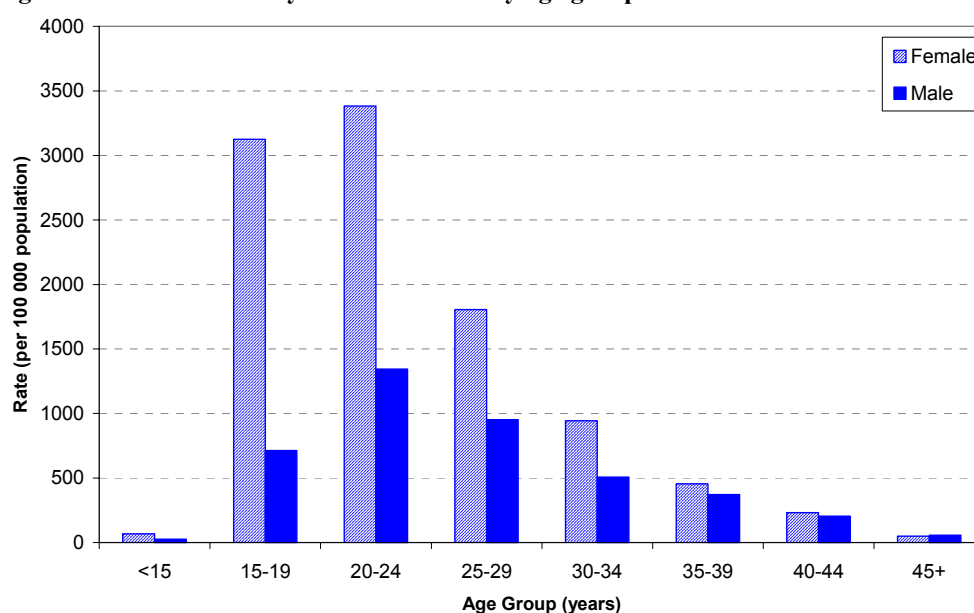
In 2002, laboratories in the Auckland region tested a total of 114,528 specimens for chlamydia, of which 6514 specimens or 6451 patients were positive (Table 21). The mean age of chlamydia cases was 25 years (median age 23 years, range 0-99 years).

Over half (60%) of all chlamydia cases occurred in people aged 15-24 years. One hundred and twenty four cases were reported in people aged less than 15 years; of these 49 (40%) were aged between 12 and 14 years and 60 (48%) were infants aged less than 12 months. Seventy one percent of all cases were females.

**Table 21. Case numbers and rates of chlamydia in Auckland by age group and sex: 2002**

Age group	Number of cases				Rate per 100 000		
	Female	Male	Unknown	Total	Female	Male	Total
<15 years	88	36	0	124	67	26	46
15-19 years	1307	304	2	1613	3125	713	1909
20-24 years	1424	547	10	1981	3382	1345	2393
25-29 years	815	388	2	1205	1805	952	1403
30-39 years	717	410	5	1132	699	438	577
40+ years	205	186	0	391	86	87	86
Unknown	3	2	0	5			
<b>Total</b>	<b>4559</b>	<b>1873</b>	<b>19</b>	<b>6451</b>	<b>756</b>	<b>328</b>	<b>550</b>

**Figure 19. Rates of chlamydia in Auckland by age group and sex: 2002**



# Gonorrhoea

## Waikato and Bay of Plenty

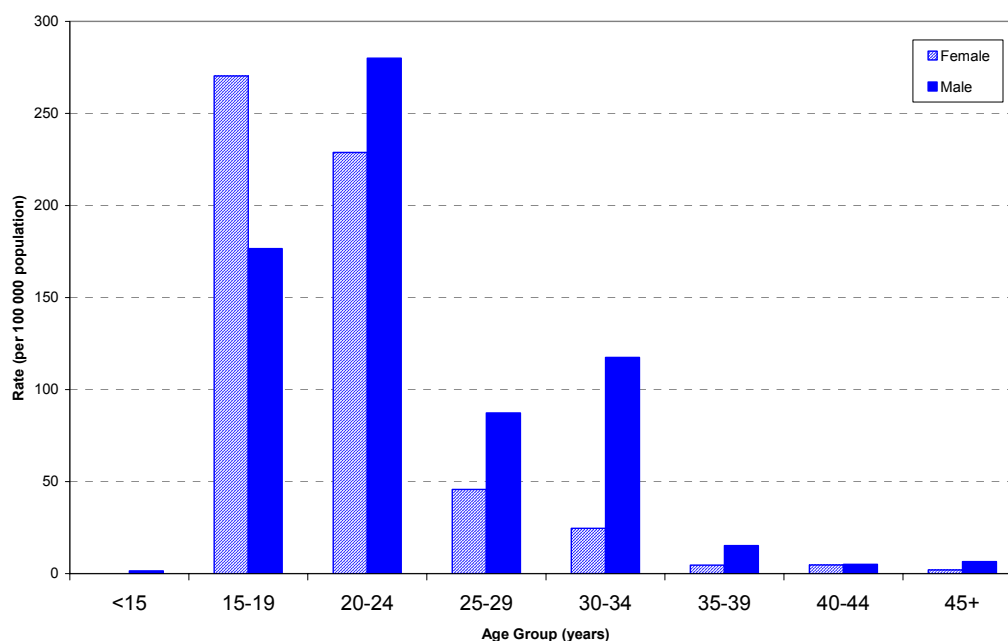
In 2002, laboratories in Waikato and BOP reported 235 gonorrhoea cases. Males accounted for 54% of all cases. The mean age of gonorrhoea cases was 23 years (median age 21, range 14-75 years). Seventy three per cent of all gonorrhoea cases were aged 15-24 years. Only one case of gonorrhoea was reported in a child aged 14 years.

**Table 22. Case numbers and rates of gonorrhoea in Waikato/BOP by age group and sex: 2002**

Age group	Number of cases				Rate per 100 000		
	Female	Male	Unknown	Total	Female	Male	Total
<15 years	0	1	0	1	0	1	1
15-19 years	52	36	1	89	270	177	225
20-24 years	37	45	0	82	229	280	254
25-29 years	8	14	0	22	46	87	66
30-39 years	6	24	0	30	14	64	38
40+ years	3	7	0	10	2	6	4
Unknown	0	0	1	1			
<b>Total</b>	<b>106</b>	<b>127</b>	<b>2</b>	<b>235</b>	<b>38</b>	<b>47</b>	<b>43</b>

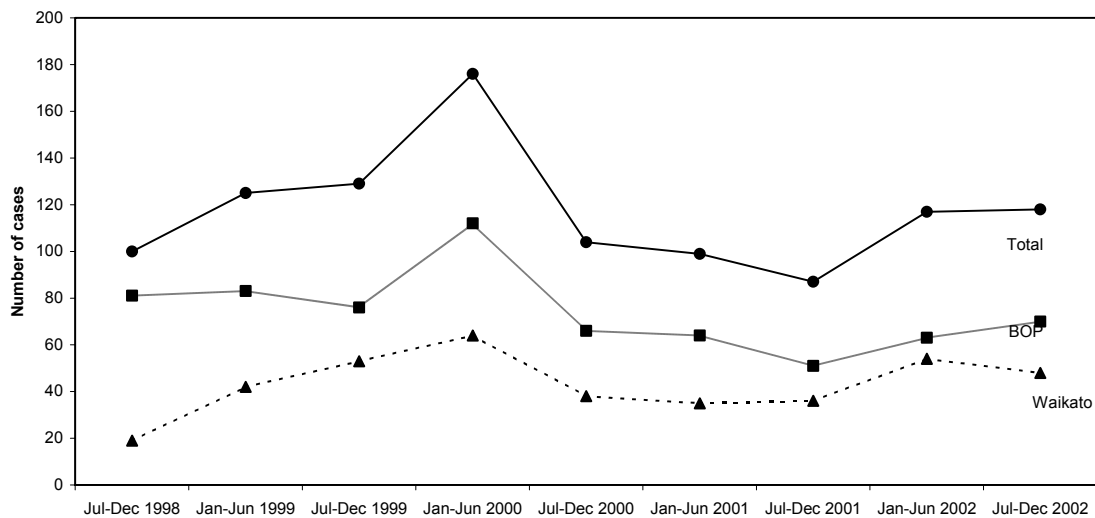
Rates of gonorrhoea in the Waikato and BOP were 24% higher in males than in females (Table 22). The highest rates of gonorrhoea were in males aged 20-24 years, followed by females aged 15-19 years (Figure 20).

**Figure 20. Rates of gonorrhoea in Waikato/BOP by age group and sex: 2002**



The total number of gonorrhoea cases reported by Waikato and BOP laboratories in 2002 was 26.4% higher than the number reported in 2001 (Figure 21). This increase in case numbers shows a reversal in the decreasing trend since July 200.

**Figure 21. Trends in gonorrhoea in Waikato/BOP: July 1998 - December 2002**



## Auckland

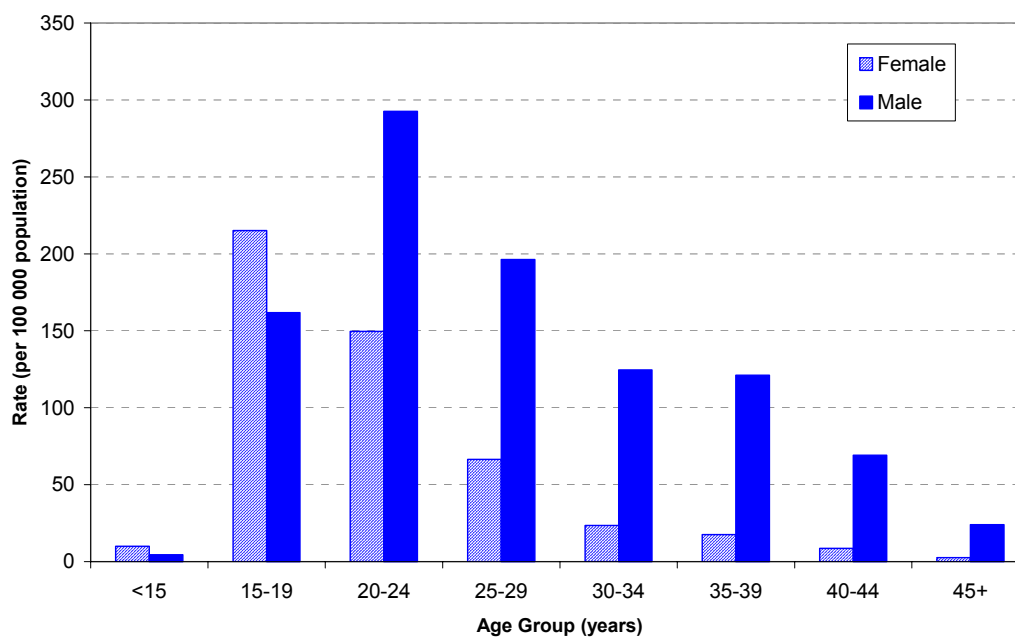
In 2002, laboratories in the Auckland region reported 692 cases of gonorrhoea (Table 23). The majority (67%) of cases in Auckland were male. The mean age of gonorrhoea cases was 27 years (median age 24, range 0-70 years). Forty nine percent of gonorrhoea cases were aged 15-24 years. Nineteen cases of gonorrhoea were reported in people aged less than 15 years; of these, 14 were adolescents aged 11-14 years, three were children, and two were infants aged less than 12 months.

**Table 23. Case numbers and rates of gonorrhoea in Auckland by age group and sex: 2002**

Age group	Number of cases				Rate per 100 000		
	Female	Male	Unknown	Total	Female	Male	Total
<15 years	13	6	0	19	10	4	7
15-19 years	90	69	1	160	215	162	189
20-24 years	63	119	0	182	150	293	220
25-29 years	30	80	0	110	66	196	128
30-39 years	21	115	1	137	20	123	70
40+ years	9	71	0	80	4	33	18
Unknown	3	1	0	4			
<b>Total</b>	<b>223</b>	<b>461</b>	<b>2</b>	<b>692</b>	<b>38</b>	<b>81</b>	<b>59</b>

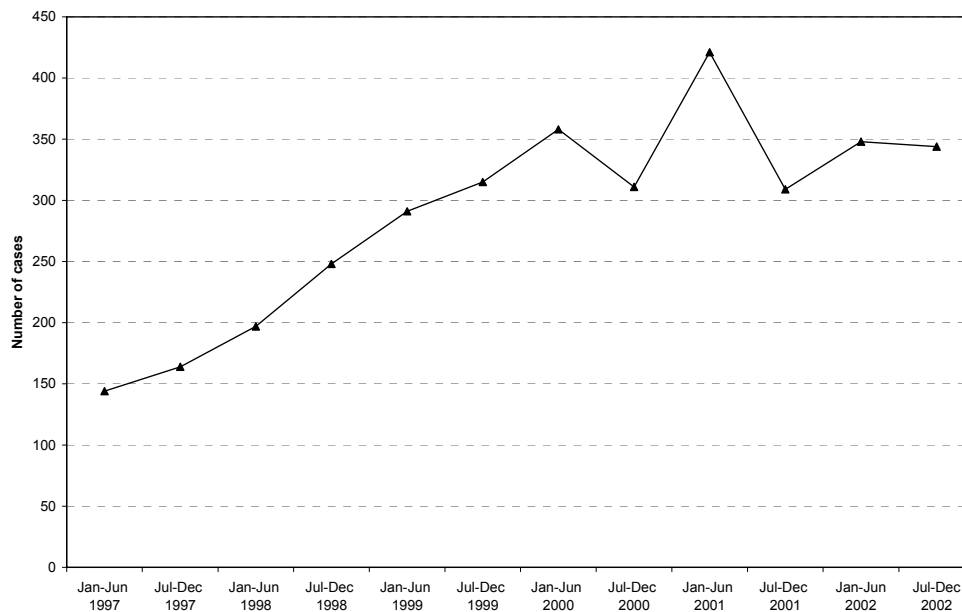
Rates of gonorrhoea in Auckland were 113% higher in males than in females. The highest rates of gonorrhoea were in males aged 20-24 years, followed by females aged 15-19 years (Figure 22).

**Figure 22. Rates of gonorrhoea in Auckland by age group and sex: 2002**



Following a steady increase in the number of gonorrhoea cases in Auckland since January 1997, there was a decrease in the number of cases reported during the second half of 2000, a sharp rise in numbers for the first quarter of 2001, followed by a return to December 2000 numbers. (Figure 23).

**Figure 23. Trends in gonorrhoea in Auckland: January 1997 to December 2002**



## **Antibiotic Resistance for *N. Gonorrhoeae***

Last year it was reported that a national survey on gonorrhoeae resistance rates would be carried out. In 2002, all gonococci isolated in New Zealand during a four month period were collected for this national antimicrobial susceptibility survey. The aims of the survey were to provide current data on gonococcal susceptibilities in New Zealand. The results of the survey are displayed in Table 24.

**Table 24. Antibiotic resistance for *N. gonorrhoeae*. 2002 NZ data.**

<b>Antibiotic</b>	<b>Total Tested</b>	<b>Total resistant</b>	<b>NZ Rate</b>
Fluoroquinolone (ciprofloxacin)	413	28	6.8%
Penicillin	413	37	9.0%
Tetracycline	413	115	27.8%

When resistance to antibiotic reaches 5% it is usually considered to no longer be an acceptable first-line treatment option for gonorrhoea. Based on the results of this survey, the prevalence of penicillin resistance (9.0%) and ciprofloxacin resistance (6.8%) in all areas of New Zealand is now above this 5% threshold.

# Discussion

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Sexually transmitted infections (STIs), in particular *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and genital herpes facilitate the spread of HIV, and are also associated with long term sequelae such as infertility, ectopic pregnancy and cancer<sup>1,2</sup>. They are still increasing in New Zealand and, given the links to long term sequelae, and their amenability to effective clinical and population action, it is important that they remain a public health priority<sup>3</sup>.

The prevalence of a specific STI in a community depends upon three factors: the duration of infectivity; the probability of sexual transmission occurring; and the rate of sexual partner change. Bacterial STIs, when treated, tend to have a much shorter period of infectivity than viral STIs. To sustain bacterial infection a key factor is the frequency of partner change, but another key issue is that the duration of infectivity, which varies greatly depending on the availability of, and access to, medical care<sup>4</sup>. By contrast, viral STIs more often produce lifelong infections with prolonged periods of infectivity<sup>5,6</sup>.

## BACTERIAL STIs

### *Chlamydia*

Similar to most industrialised countries, genital chlamydia is the most commonly diagnosed bacterial STI in New Zealand. The number of confirmed chlamydia cases at SHCs rose by more than 100% between 1995 and 2002. While the move to more sensitive nucleic acid amplification tests (NAATs) may be a factor in this increase, the number of chlamydia cases has also increased at SHCs not using NAAT. Regardless of improvements in testing methods, the high level of chlamydial infection represents a considerable burden of disease in New Zealand.

Previous chlamydia infection rates in the general population have been estimated to be between 256 and 777 per 100 000 population<sup>7,8</sup>. For 2002, the laboratory reports for Auckland and the Waikato and BOP regions together, suggest a rate of approximately 598 cases per 100 000 of the general population, which represent an increase in almost 20% compared with last year (503 per 100 000)<sup>9</sup>.

Data from laboratories in the Waikato and BOP suggest the incidence of chlamydia in the New Zealand population is considerably higher than in Australia, a comparable country using laboratory data for STI surveillance<sup>10</sup>. The chlamydia rate in the Waikato and BOP population is over five times higher than rates in Australia and four times higher than the rate in Canada<sup>11</sup>. While a higher level of testing, or the use of NAAT in the Waikato and BOP laboratories may explain some of the difference in rates between New Zealand and Australia, it does not explain a five-fold difference, particularly given that much of the extra testing in New Zealand, compared to Australia, is not being carried out in those most at risk of infection. Only 13% of tests came from those aged less than 21 years, although they accounted for 31% of all positive tests<sup>7</sup>. A number of countries have implemented screening guidelines to better ensure that the most at risk groups are tested for chlamydia<sup>13-15</sup>.

Given the rate of asymptomatic infection (approximately 80% in females and over 45% in males), partner notification becomes crucial in the control of chlamydia infection as treating index cases without treating sexual partners results in a high rate of reinfection. Clinicians need to make this a priority for controlling the spread of infection<sup>9,16</sup>.

Rates of chlamydia calculated using laboratory data (which are dominated by GP specimens), appear to be considerably higher in females than in males. However, GPs are more likely to screen females than males, not only because they are more likely to be asymptomatic<sup>17</sup> and are more vulnerable to long term complications, but also because they attend more frequently and can be opportunistically tested during cervical smears and antenatal check-ups. In contrast, at SHCs, where all attendees are screened, rates of chlamydia are higher in males than in females. This is partly because males are more likely to be symptomatic and seek treatment, and also because males are less likely to attend for sexual health checks when they are asymptomatic.

## **Gonorrhoea**

The number of gonorrhoea cases diagnosed at *SHCs* has increased each year since 1996, with the largest increase of 28% occurring between 1999 and 2000, and a further increase of over 8% during 2001. During 2002, however, there has been no increase. The overall increase between 1996 and 2002 was 94%.

The increase in gonorrhoea at *SHCs* occurred in all age, sex and ethnic groups. The percentage of female gonorrhoea cases increased from 1996 to 1997, remained static at 45% between 1998-2000, dropped to 40% in 2001, continue to decrease in 2002 to 37%. Young people aged 15-24 years continue to account for over half of all gonorrhoea cases. The percentage of gonorrhoea cases diagnosed among Maori and Pacific peoples during 2002 remained similar to 2001 (42% and 12% respectively).

The increase in gonorrhoea may reflect failures in safe sex messages and/or the need for more targeted sexual health promotion, shortfalls in contact tracing, or barriers to access of sexual health services. Commentators in New Zealand<sup>18</sup> and elsewhere have expressed concern at the resurgence of gonorrhoea,<sup>1,19-23</sup> and emphasised the importance of partner notification in the control of this infection<sup>20,24</sup>.

The incidence of gonorrhoea in New Zealand is considerably higher than other countries using laboratory data for surveillance. The rate of gonorrhoea in Auckland, Waikato and the BOP is three to four times higher than the rate in Canada<sup>11</sup>, and twice the Australian rates for the same period<sup>25</sup>

Last year the annual report raised concerns about the number of bacterial infection in infants. During 2002, up to 96 babies under the age of 12 months had chlamydia and two babies had gonorrhoea diagnosed at Auckland and Waikato/BOP laboratories. This represents an increase of almost 70% compared to 2001. Even accounting for possible duplications (about 5 cases at most) this is a significant increase. These babies would have contracted the infections from their mothers perinatally. This may reflect a failure to screen for STIs in pregnancy and/or adequate antenatal care.

## **Syphilis**

The number of syphilis cases reported during 2002 has increased dramatically from an average baseline of about 20 cases per year to 47 cases. As reported by some *SHCs* (in particular Auckland and Wellington) most of these cases are imported, from overseas travellers. There might also be some issues of misclassification, which will be addressed by an audit exercise to be conducted in 2003.

## **VIRAL STIs**

### **Genital Herpes**

The number of cases of genital herpes simplex virus (HSV) reported from *SHCs* declined steadily from 1996 to 2001. During 2002, however, there has been a substantial increase, with 713 cases, to levels not seen since 1997. Like previous years, cases of genital herpes in 2002 were predominantly European, and equally distributed between sexes, this is unlike other countries e.g. UK where the male to female ratio, seen at comparable clinics, is 1:1.6<sup>12</sup>.

The reason for higher rates of genital herpes amongst Europeans may lie in socio-economic factors. It is postulated that people in lower socio-economic groups are more likely to be exposed to oral HSV-1 infection as children. People exposed at a young age may be less susceptible to genital HSV-1, and possibly less susceptible to symptomatic genital HSV-2 infection as adults. However, ethnicity differences may simply reflect sexual behaviour patterns, as people tend to choose partners in their own ethnic groups<sup>5</sup>.

### **Genital Warts**

Genital warts is the most commonly diagnosed STI at *SHCs*, with 3510 first diagnoses reported in 2002, 6% higher than 2001. Highest rates are found in the 20 to 24 year age group, in all ethnic groups. Based on overseas trends<sup>2,28</sup>, it seems unlikely that the decline in numbers from 1997 to 1999 reflected a real decrease in disease incidence. This continuing increase from 2000 through 2002 may reflect changes in attendance patterns or service provision.

Genital warts is of particular public health importance because of the association between some types of human papillomavirus (HPV, mainly types 16 and 18<sup>1,2</sup>) and cervical, penile and anal cancers<sup>29</sup>. However, approximately 90% of genital warts are caused by HPV types 6 or 11, which are not associated with cervical cancer<sup>16</sup>.

## High Risk Groups

### *Young Age*

The majority of STIs were in teenagers and young adults, with over 58% of gonorrhoea, 74% of chlamydia and 65% of genital warts cases being people aged less than 25 years. Young people were more likely to be diagnosed with multiple STIs, with over 71% of concurrent infections. While high STI rates in young people have been reported in many countries<sup>17,30-32</sup>, laboratory data suggest the rates in young New Zealanders are considerably higher than in other countries.

Young adults are at higher risk of acquiring STIs for a number of reasons, including behavioural factors, such as the increased likelihood of multiple sexual partners and unprotected intercourse. Early onset of sexual behaviour is associated with low socio-economic status, poverty, and poor educational opportunities, being born to a teenage mother and high rates of unemployment<sup>33</sup>. The higher prevalence of STIs among young people may also reflect barriers to health services.<sup>1</sup>

### *Ethnicity*

Rates of chlamydia and gonorrhoea at SHCs and FPCs are considerably higher in Maori and Pacific people than in Europeans. This finding is consistent with New Zealand studies undertaken in SHCs<sup>34-36</sup> and general practices<sup>37</sup>. Higher rates of bacterial STIs have also been found among ethnic minorities in other countries. In Australia, being Aboriginal appears to be an independent risk factor for infection<sup>38</sup>; in the USA, the gonorrhoea rate in African Americans is approximately 30 times higher than the rate in white Americans<sup>17</sup>.

Ethnicity is one of a number of factors that determine sexual behaviour, and defining the relationship between ethnicity and risk of infection has been one of the most difficult areas of STI epidemiology<sup>39</sup>. In the USA, differences in rates between ethnic groups are partly due to a reporting bias, as African Americans are more likely to seek care in public clinics that report STIs more completely than private clinics<sup>17,29,40</sup>. Since it is accepted that there are no known differences in biological susceptibility between ethnic groups<sup>39</sup>, other factors clearly play a role in the disparities in STI incidence between ethnic groups. These factors include more fundamental determinants of health status such as poverty, access to health care, health-seeking behaviours, and sexual networks with a high STI prevalence<sup>1,29</sup>. In New Zealand, the sub-optimal use of relevant health services by Maori and Pacific peoples is thought to play a role in their high STI rates<sup>34</sup>. Overseas studies suggest that access to health care may play a bigger role in the distribution of STIs amongst some ethnic and socio-economic groups than life-styles, and sexual behaviour<sup>40</sup>.

The combination of youth and Maori or Pacific Island ethnicity appears to place teenagers in these ethnic groups at particularly high risk for STIs. Maori and Pacific peoples have teenage birth rates almost five times higher than Europeans in New Zealand, and three times higher than populations in other OECD countries<sup>41</sup>. Maori appear to have first sexual intercourse at a younger age than non-Maori<sup>42,43</sup>, and may be less likely to use contraception<sup>41</sup>. These differences, in combination with possible sub-optimal use of health services by Maori and Pacific peoples<sup>34</sup> may contribute to the higher rates of STIs in young Maori and Pacific peoples.

## Conclusion

New Zealand has high and increasing rates of bacterial STIs. The rates for chlamydia and gonorrhoea are five and two times respectively higher than those reported in Australia. This year there has been a significant increase in the number of syphilis cases, which deserves closer scrutiny. There has also been a significant increase in infants with STIs, which was highlighted last year but continues to increase. This is a clear problem to address through effective STI screening in pregnancy. The disproportionately high rates of bacterial STIs among young people, especially those of Maori and Pacific peoples are of particular concern. Lack of diagnosis and/or barriers to access effective treatment have led to a "hidden epidemic" of a large group of asymptomatic individuals with the possibility of major health consequences later in life, particularly among women.

## **Recommendations**

Other than the recommendations articulated in previous reports in order to tackle the increasing occurrence of STIs in New Zealand as a whole, (in particular to reconsider the case to make them notifiable) there are two specific points this year that need to be addressed.

### **SYPHILIS**

There is a need to confirm and understand the increase during 2002. There needs to be an effective audit process to assess diagnostic process.

### **INFANT INFECTIONS**

There needs to be a system to assess and maximize the effectiveness of the screening for STIs during pregnancy.

## References

1. Division of STD prevention. Sexually transmitted disease surveillance 1999: Department of Health and Human Services, Atlanta: Centres for Disease Control and Prevention (CDC), 2000.
2. Public Health Laboratory Service. 1998 Annual Review of Communicable Diseases, England and Wales. London: Public Health Laboratory Service, 2000.
3. BMA. Sexually transmitted infections *BMA*, London 2002
4. Fairley CK, Bowden FJ, Gay NJ, Paterson BA, Garland SM, Tabrizi SN. Sexually Transmitted Disease in disadvantaged Australian communities. *JAMA* 1997; 278:117-1
5. Hughes G, Catchpole M, Rogers PA, et al. Comparison of risk factors for four sexually transmitted infections: results from a study of attendees at three genitourinary medicine clinics in England. *Sex Transm Infect* 2000; 76:262-7.
6. Whitley RJ, Meheus A, (Eds). The public health significance of genital herpes. Recommendations from the International Health Management Forum, Management Strategies Workshop (1-5 June 1998) and 6th Annual Meeting (20-23 November 1998), 1998.
7. Riley D, McCarthy M, Lang S, Morris A. Is chlamydial infection underdiagnosed - particularly in teenage males? [letter]. *N Z Med J* 2001; 114:49.
8. Reid M. The epidemiology of STDs in NZ. *New Ethicals* 1997;37-42
9. Gilmore K, Martin M, Ortega JM and Garret N. Sexually Transmitted Infections in New Zealand. Annual Surveillance Report 2001. ESR Ltd, Popririua, May 2002.
10. Donovan B. Rising prevalence of genital *Chlamydia trachomatis* infection in heterosexual patients at the Sydney Sexual Health Centre, 1994 to 2000. *CDI* 2002;26:51-5
11. Division of STD Prevention and Control BoHA, STD and TB. 1998/1999 Canadian sexually transmitted disease (STD) surveillance report. *Can Commun Dis Rep* 2000; 26S6:1-36.
12. PHLS, DHSS&PS and the Scottish ISD(D)5 Collaborative Group. Sexually Transmitted Infections in the UK: New Episodes seen at Genitourinary Medicine Clinics, 1995 to 2000. London: Public Health Laboratory Service, 2001
13. Davies HD, Wang EEL, with the Canadian Task Force on the Periodic Health Examination. Periodic Health Examination, 1996 update: 2. Screening for chlamydial infections. *Can Med Assoc J* 1996; 154:1631-44.
14. Donovan B. Genital chlamydial infections: management. *N Ethicals* 1997; Nov:47-8, 50-3.
15. Centres for Disease Control and Prevention. Recommendations for the prevention and management of *Chlamydia trachomatis* infections, 1993. *MMWR* 1993; 42:1-39.
16. Gilson RJC, Mindel A. Sexually transmitted infections. *BMJ*. 2001;322:1160-4
17. Division of STD Prevention. Sexually transmitted disease surveillance, 1998. Atlanta: Centres for Disease Control and Prevention (CDC), 1999.
18. Franklin R. New millennium bug - gonorrhoea is back. *New Zealand Doctor* 2000; 10 May 2000.
19. Martin IMC, Ison CA, London Gonococcal Working Group (LGWG). Rise in gonorrhoea in London, UK. *Lancet* 2000; 355:623.
20. Goulet V, Sednaoui P, Laporte A, et al. The number of gonococcal infections identified by the RENAGO network is increasing. *Surveillance* 2000; 5:2-5.
21. Berglund T, Fredlund H, Ramstedt K. Reemergence of gonorrhoea in Sweden. *Sex Transm Dis* 1999; 26:390-1.
22. Centres for Disease Control and Prevention. Increases in unsafe sex and rectal gonorrhoea among men who have sex with men—San Francisco, California, 1994-1997. *MMWR* 1999; 48:45-8.
23. Tapsall J. Gonococcal surveillance. *Commun Dis Intell* 1999; 23:366-7.
24. Fenton KA, Rogers PA, Simms I, et al. Increasing gonorrhoea reports—not only in London. *Lancet* 2000; 355:1907.
25. NNDSS. Communicable Diseases Surveillance. *CDI* 2002;26:58-78
26. Lamagni TL, Hughes G, Rogers P, et al. New cases seen at genitourinary medicine clinics: England 1998. *Commun Dis Rep Suppl* 1999; 9(Suppl 6):S2-12.
27. 33. Division of STD Prevention. Tracking the hidden epidemics. Trends in STDs in the United States 2000. Atlanta: Centres for Disease Control and Prevention (CDC), 2001.
28. Connor N, Catchpole MA, Rogers PA, et al. Sexually transmitted diseases among teenagers in England and Wales. *Commun Dis Rep Rev* 1997; 7:R173-8.
29. Hart G. The epidemiology of genital chlamydial infection in South Australia. *Int J STD AIDS* 1993; 4:204-10.
30. Division of STD Prevention & Control L. Sexually transmitted diseases in Canada: 1996 surveillance report. *Canadian Commun Dis Report* 1999; 25S1:1-31.
31. Social Exclusion Unit. *Teenage Pregnancy*. London:TSO, 1999
32. Connor J, Paul C, Sharples K, Dickson N. Pattern of disease and HIV testing at sexually transmitted disease clinics. *N Z Med J* 1997; 110:452-5.

33. Willmott FE. Gonorrhoea in women of differing ethnic origin in Auckland. N Z Med J 1982; 95:176-8.
34. Say P, Hookham A, Willmott F. Unsuspected *Chlamydia trachomatis* in females attending a sexually transmitted diseases clinic. N Z Med J 1983; 96:716-8.
35. Christmas BW. A pilot survey of venereal disease in general practice. N Z Med J 1968; 67:188-91.
36. Hart G. Factors associated with genital chlamydial and gonococcal infection in females. Genitourin Med 1992; 68:217-20.
37. Zenilman JM, Shahmanesh M, Winter AJ. Ethnicity and STIs: more than black and white. Sex Transm Infect 2001; 77:2-3.
38. Plummer D, Forrest B. Factors affecting indigenous Australians' access to sexual health clinical services. Venereol 1999; 12:47-52.
39. Dickson N, Sporle A, Rimene C, Paul C. Pregnancies among New Zealand teenagers: trends, current status and international comparisons. N Z Med J 2000; 113:241-5.
40. Pool I, Dickson J, Dharmalingam A, et al. New Zealand's contraceptive revolution. Hamilton: Population Studies Centre, University of Waikato, 1999.
41. Fenwicke R, Purdie G. The sexual activity of 654 fourth form Hawkes Bay students. N Z Med J 2000; 113:460-4.