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SEXUALLY TRANSMITTED INFECTIONS IN NEW ZEALAND
ANNUAL SURVEILLANCE REPORT 2015

PREPARED FOR: Ministry of Health

CLIENT REPORT No: FW15023

PREPARED BY: Health Intelligence Team, Health Group

PUBLISHED: October 2018

This report is available on the internet at www.surv.esr.cri.nz

Published: October 2018

Suggested citation:
The Institute of Environmental Science and Research Ltd.
Sexually Transmitted Infections in New Zealand: Annual Surveillance Report 2015
Porirua, New Zealand

ISSN: 1176–080X
Client report: FW15023

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ACKNOWLEDGEMENTS

This report has been prepared by the Health Intelligence Team at ESR. The production of this report was led by Selina Takanashi and Dr Jill Sherwood. Particular acknowledgements go to:

- Pauline Quinn for the collation and processing of data; and
- Ali Borman and Rebekah Roos for peer checking; and
- Tim Wood for generating some of the figures; and
- Ali Borman and Donald Peterkin for assisting with some of the analyses.

Data on gonococcal antibiotic resistance was provided by Helen Heffernan from ESR's Antibiotic Reference Laboratory up until 2012.

The authors would like to acknowledge that this report could not have been produced without the continuing support of staff at sexual health and family planning clinics, and the participating laboratories throughout New Zealand. Their provision of STI surveillance data is greatly appreciated. The contribution made by student and youth health clinics to STI surveillance between 1998 and 2011 is also acknowledged.

Particular thanks go to Dr Sunita Azariah, Dr Susan Taylor and Dr Tomasz Kiedrzynski (Ministry of Health) for reviewing drafts of the report.

Disclaimer

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SUMMARY

In New Zealand, at the time this surveillance data was collected, sexually transmitted infections (STIs,) with the exception of AIDS, were not notifiable. Surveillance efforts were based on the voluntary provision of data from sexual health clinics (SHCs), family planning clinics (FPCs) and laboratories. Population and disease surveillance therefore varies with the data source.

This report summarises the surveillance information for STIs in 2015 and examines trends over time. The STI burden in New Zealand is considerable, with young people, those of non-European ethnicities and MSM over-represented.

CHLAMYDIA

- Chlamydial infection was the most commonly reported STI in New Zealand (29,404 cases)
- The national chlamydia rate was 640 cases per 100,000 population, a significant increase from 2014 (629 cases per 100,000) but similar to the 2013 rate (637 cases per 100,000)
- Between 2011 and 2015, test positivity decreased from 9.0% to 7.4%; during this period the number of specimens tested increased by 45%, with 80% of specimens from females
- Since 2011, Tairawhiti, Lakes and Hawkes Bay DHBs have consistently had the highest chlamydia rates
- There were more than twice the number of chlamydia cases reported in females than in males
- The majority of cases (83%) were reported in the 15–29 years age group
- Seventy-nine laboratory-diagnosed cases of chlamydia were reported in the <1-year age group; 65 cases of these cases had the site of infection reported, all of which were the eye
- In those aged 15–29 years the highest estimated chlamydia rates were reported in the Māori and Pacific peoples ethnic groups
- Testing rates across all age groups, were almost four times higher in females than males, with the highest annual population testing rates reported in those aged 15–29 years.
- Māori females in the 20–24 years age group had the highest annual population testing rate across the ethnic groups (717 tests per 1000 population) but many of these were repeat tests in the same person - only 44.3% of this group received at least one test during 2015
- Annual testing coverage rates in the highest risk age groups suggest that <10% of males and 21–35% of females in these had at least one annual test
- 71% of cases were diagnosed outside of a sexual health or family planning clinic, most likely in primary care settings

Commentary: There was a small but significant increase in the national chlamydia rate following relatively stable rates from 2011–2014. The much higher rate reported in females is probably due to far lower testing rates in males, suggesting many infections in males remain undiagnosed and untreated. Despite an overall decrease from 2011–2015 in rates for females and males in the 15–19 and 20–24 years age groups, the highest risk age groups remain those aged 15–29 years. However, test positivity for these age groups has not increased despite a small increase in testing rates, suggesting that the increase in incidence may be due to increased diagnosis rather than increasing prevalence. The persisting pattern of infection in babies highlights the need, noted in previous reports, to improve STI screening during pregnancy. Māori and Pacific peoples ethnic groups continue to show a higher burden of disease than other ethnic groups, with higher estimated incidence rates, and test positivity in the 15–29 years age groups compared with national rates. Although testing and coverage rates for Māori females in these age groups, and for Pacific females in the 25–29 years age group, are higher than the national average, the rates for Māori and Pacific males in these age groups are lower than the female rates but with much higher test positivity rates. This may be due to reduced access to healthcare services and under-diagnosis in the males and suggests that they may be a pool for re-infection within their social networks.

GONORRHOEA

- The national rate of gonorrhoea was 75 cases per 100,000 population, a significant increase from the 2014 estimated rate (70 per 100,000)
- Between 2011 and 2015, test positivity increased slightly from 0.8% to 1.0% during which time the number of specimens tested increased by 27.8%, with 80% of specimens from females
- Although the highest rate of gonorrhoea was reported in Tairawhiti DHB (229 cases per 100,000 population, this was a significant decrease from the 2014 rate (316 per 100,000)
- 50.5% of laboratory-confirmed cases were diagnosed in the Auckland region (1733 cases); the Auckland rate of 109 per 100,000 was a significant increase from 2014 (82 per 100,000)
- The national rate for males was higher than for females (86 and 63 per 100,000 respectively) with male rates higher than the female rate in all regions with large urban centres
- 69% (2348) of cases diagnosed were aged 15–29 years and four cases were aged <1 year
- In those aged 15–29 years the highest estimated gonorrhoea rates were predominantly reported in the Māori and Pacific peoples ethnic groups
- Estimated national rates for males were higher than female across all ethnicities apart from Māori, and this pattern was also seen in the high risk age groups apart from Pacific peoples and European (15–19 years) ethnicities where female rates were higher than male
- Annual population testing rates across all age groups were almost four times higher for females compared with males with the highest testing rates in the 15–34 years age group
- Annual testing coverage rates in the highest-risk age groups suggest that <10% of males and 22–36% of females had at least one annual test.
- An increasing number of gonorrhoea cases were diagnosed via anorectal and throat specimens in males (>30% of positive tests), and in throat specimens in females
- Eight *N. gonorrhoeae* isolates with decreased susceptibility to ceftriaxone were identified in 2015: Waikato DHB (4 cases), Wellington region (3 cases) and Auckland region (1 case)
- 62% of cases were diagnosed outside of a sexual health or family planning clinic, most likely in primary care settings

Commentary: There was a significant increase in the national gonorrhoea rate in 2015, largely driven by the increased rate in the Auckland region where the rate is higher for males compared with females. It is unclear whether this reflects a true increase in incidence or is due to increased testing and screening of infected people, particularly males who are now able to be tested on a urine sample rather than a urethral swab. As in recent years a higher rate in males was also reported in other regions with large urban centres (Wellington region, Canterbury and Southern DHBs), all regions where there has been a notable increase in syphilis cases numbers among MSM. There is a difference across ethnic groups with a higher gonorrhoea rate in Maori females, all age groups, and in younger females of Pacific peoples ethnicity, compared with males. These differing patterns among ethnicities and geographic settings suggest that a range of strategies are needed for control of gonorrhoea.

GENITAL HERPES

- In 2015, 1089 first presentations of genital herpes were reported; 824 cases were seen in SHCs and 265 cases in FPCs, a decrease from 2014 in both clinic types
- Nationally case numbers have decreased in SHCs but shown a small increase in FPCs from 2011–2015 but there is variation across DHBs for the trend data for SHCs with an increasing trend seen in the Auckland and Wellington regions and Canterbury DHB
- More cases were reported in females than males across both clinic types
- Since 2011 a decrease has occurred in case numbers reported by SHCs in females aged 15–19 and 20–24 years but an increase in case numbers reported by SHCs for both males and females in the 25–29 years age group. This compares with generally stable numbers in males reported by FPCs (note very low numbers) but an increasing trend in females reported by FPCs across all age groups between 15 and 39 years
- 34.6% of cases reported from SHCs were aged <25 years and 61.1% of cases reported from FPCs were aged <25 years
- The majority of cases reported by both SHCs and FPCs were of European ethnicity (68.4% and 78.1% respectively)

Commentary: Although case numbers of genital herpes have shown a decreasing trend over the past five years this must be interpreted with caution as surveillance is sentinel clinic-based and thus rates are not able to be calculated. Differing patterns between years and clinic types may reflect changes in clinic attendance rather than changes in incidence. However, there are several persistent patterns of note. The increasing trend seen in genital herpes case numbers in Auckland and Wellington regions and Canterbury DHB when compared with a decreasing trend in other areas, is of interest as these three areas also show an increasing trend in other STIs (apart from HPV) reported by SHCs as well as increasing rates of gonorrhoea.

GENITAL WARTS

- 1692 first presentations of genital warts were reported in 2015. Of these, 1504 were seen in SHCs
- From 2014 to 2015 case numbers decreased in SHCs and FPCs by 15.4% and 16.8% respectively
- More cases were reported in males in SHCs and in females in FPCs
- Between 2011–2015 case numbers have decreased or remained stable in all age groups in SHCs and in those aged <30 years in FPCs
- Decreases in case numbers of >50% were seen in the 15–19 years age group for both clinic types and in the 20–24 years age groups for SHCs from 2011–2015
- Case numbers reported from both clinic types have decreased in European, Māori and Pacific peoples ethnic groups from 2011 to 2015

Commentary: The decreasing trend in the number of cases of genital warts reported from both clinic types continued in 2015 and remains most notable in both females and males aged 15–24 years. These decreases follow the introduction of HPV vaccine onto the routine immunisation schedule for girls aged 12 years from late 2008, along with a catch up programme targeting girls born on or after 1 January 1990. The decline in genital warts in the clinic data is consistent with findings from Australia.

INFECTIOUS SYPHILIS

- 225 infectious syphilis cases were reported in 2015, an increase from 2014 (140 cases) and 2013 (82 cases)
- The majority of cases were reported from the Auckland region (64.9%, 146 cases) and Canterbury DHB (23 cases)
- 89.8% of cases reported by SHCs and FPCs were male
- 219 cases were reported from SHCs and therefore had enhanced surveillance data provided:
  - 200 cases were male, 3 transgender and 16 female
  - Highest number of cases in males were in the 20–25, 25–29 and 30–35 years age groups and there has been an increasing trend in these age groups since 2011
  - Of the 200 cases in males, 84.8% (167/197) were reported to be MSM
  - 21% of cases were reported to be heterosexual, an increase from 14% reported in 2014
  - Similar to 2011–2014, the majority of the MSM cases reported New Zealand European ethnicity (57.1%), followed by Asian (13.1%) and Māori (12.5%)
  - The most common country of infection was reported to be New Zealand
  - The most common primary reason for testing for both MSM and heterosexuals was clinical symptoms or suspicion, a similar finding to the previous five years
  - 29.6% of MSM cases had a concurrent STI diagnosis, most commonly chlamydia, and 27.2% were HIV seropositive
  - The number of HIV seropositive cases in MSM continued to increase, and have shown a fourfold from 2011 to 2015 (11 to 46 cases).

Commentary: Infectious syphilis in New Zealand continues to be most commonly reported as an infection in MSM with the majority of cases concentrated in areas with large urban populations. However, the increased proportion of cases reported in 2015 that were heterosexual is of concern, as is the changing pattern of ethnicity among cases. Both suggest wider transmission, possibly into groups that have not been seen as high risk and may therefore not be offered asymptomatic screening. The low numbers of cases initially tested as “screening”, especially for females, supports this concern. Increasing awareness amongst clinicians that the recent increase in infectious syphilis includes the heterosexual population and promoting the New Zealand Sexual Health Society STI Guidelines would be useful strategies to address these concerns.

OTHER STIs

- 751 cases of NSU were reported in 2015, the majority in SHCs (725 cases)
- 28.6% of cases in SHCs were aged <25 years, and the mean age was 32.1 years
- The number of NSU cases reported in both clinic types increased between 2011 to 2015, with an 18.9% increase in cases seen in SHCs
- Two cases of LGV were reported in SHCs, both male, and aged 59 and 65 years respectively

Commentary: There is an increasing national trend in NSU cases driven by increasing case numbers in Auckland and Wellington regions and Canterbury DHB, the same regions with the highest numbers of infectious syphilis cases. The increasing trend is seen in all age groups above 20 years but is limited to the European and Other ethnic groups. While this may reflect differing incidence patterns in these ethnic groups it may also be related to differences in access to health services.

Both new LGV cases reported in 2015 were in males, as were the four LGV cases reported in 2013 and 2014, and all six cases reported European or Other ethnicity.

INTRODUCTION

ABOUT THIS REPORT

The *Sexually transmitted infections in New Zealand: Annual Surveillance Report* summarises the epidemiology of STIs in 2015, and examines trends since 1998.

Surveillance data are presented by disease rather than by reporting source. For chlamydia and gonorrhoea, laboratory and clinic surveillance provide complementary information and together present an informative picture of the epidemiology of these infections in New Zealand. Genital herpes, genital warts, syphilis, NSU, chancroid, GI and LGV surveillance continue to be solely clinic based.

Laboratory surveillance now covers all 20 DHBs in the country for both chlamydia and gonorrhoea. STI laboratory data is collected via a secure SharePoint portal website, and use of the National Health Index (NHI) number allows retrieval of ethnicity information from the Ministry of Health. Test positivity and population testing rates for chlamydia and gonorrhoea by age and sex have been included in the report since 2013, and by ethnicity since 2014.

The clinic surveillance data reported this year, as for 2012–2014, is restricted to data from sexual health and family planning clinics (SHCs and FPCs). This report also incorporates data from enhanced syphilis surveillance, a project piloted by the AIDS Epidemiology Group (AEG) in 2011. This data is collected from SHCs (by AEG for 2011 and 2012, and by ESR from 2013).

Gonococcal antimicrobial susceptibility testing data has been received directly by ESR from the laboratories since 2013, and collated to provide national estimates of antibiotic resistance.

At the time this surveillance data was collected no STIs were notifiable, with the exception of AIDS, and the surveillance system relies on the ongoing support of clinic and laboratory staff. Our thanks go to all the clinics and diagnostic laboratories that contribute regularly to STI surveillance.

This report is available electronically at http://www.surv.esr.cri.nz/surveillance/annual_sti.php. A set of slides containing selected figures from this year's report is also available from the website.

SURVEILLANCE METHODS

INTERPRETING THE RESULTS

Diagnostic test changes

Nucleic acid amplification tests (NAAT) have been the standard method for testing for chlamydia in New Zealand for many years. However, the longest chlamydia trends, from 1998 onwards, will show influence from the introduction of NAAT testing.

The diagnostic tests used for gonorrhoea were not standardised across New Zealand laboratories until recently (Table 1). Most laboratories have now introduced NAAT in place of, or in addition to, culture.

NAAT and culture have different sensitivities and specificities that may influence the data. Most notably, increases in DHB gonorrhoea rates are evident in the surveillance data after the main or sole DHB testing laboratory changed to using predominantly NAAT.

Table 1. NAAT testing for gonorrhoea in laboratories

Laboratory[a]	DHB	NAAT testing	Year introduced
Northland Pathology	Northland	Yes	2012
Whangarei Hospital	Northland	No	-
North Shore Hospital	Waitemata	Yes	2012
LabPLUS	Auckland	Yes	2011
Labtests	Waitemata, Auckland, Counties Manukau	Yes	2012
Middlemore Hospital	Counties Manukau	Yes	2013
Waikato Hospital	Waikato	Yes	2013
Pathlab	Waikato, Lakes, Bay of Plenty	Yes	2013
Southern Community Laboratories	Waikato, Lakes, Hawke's Bay, Nelson Marlborough, Canterbury, South Canterbury, Southern	Yes	Since 2011
Medlab Central[b]	Tairawhiti, Whanganui, MidCentral and Wairarapa	Yes	2012–2014
Taranaki Base Hospital[c]	Taranaki	No	-
Taranaki Medlab	Taranaki	No	-
Hutt Valley Hospital	Hutt Valley	Yes	2010
Aotea Pathology	Capital & Coast	Yes	2012
Canterbury Health Lab	Canterbury, West Coast	Yes	2009

[a] Some laboratories or hospitals have their testing carried out via other laboratories therefore this is not a complete list of all laboratories as shown in Appendix C.
[b] Only Tairawhiti has performed NAAT testing since 2012 and other areas introduced NAAT in 2014.
[c] Taranaki Base Hospital only performs cultures but has NAAT tests performed by Canterbury Health Labs.

Generalisability of clinic data

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 SHCs and FPCs, and rely on other health care providers. While STIs are diagnosed and treated by a range of primary healthcare providers, including general practitioners (GPs), the data from SHCs and FPCs can provide an alert for changes occurring in the wider population.

Comparison with previous years

From 2011 to 2015, the number of clinic data sources has been relatively stable. However, not all of the participating clinics are always able to provide data for all months of the year. Clinic data is included if a clinic met the 10 out of 12 months inclusion criteria. Although caution is advised, year-on-year comparisons for this period are reasonably valid.

For the laboratory data trend analyses, DHBs were only included in the reporting if their data were considered complete according to a series of selection criteria (see Analytical methods). The New Zealand rates reported from 2011 to 2015 were calculated using a set of DHBs who had complete data for 2010 to 2012 and all DHBs (except Northland for gonorrhoea) from 2013–2014. In 2015, all DHBs provided data for both chlamydia and gonorrhoea for the first time. New data processing methods were introduced in 2013. Year-on-year comparisons using the laboratory data are reasonably valid, although caution is advised and the influence of gonococcal NAAT testing introduced during this time period must be considered.

STI SURVEILLANCE IN NEW ZEALAND

Purpose of STI surveillance

Surveillance is the on-going systematic collection, analysis and interpretation of outcome-specific data for use in the planning, implementation and evaluation of public health practice [1]. Surveillance is an important part of the strategy to reduce the short and long term burden of sexually transmitted infections [2]. New Zealand's STI surveillance system has five identified purposes [3]:

- to understand the burden of disease (as an input to planning, policy development, prioritisation and resource allocation),
- to monitor inequalities in the burden of disease between population groups,
- to monitor trends in the burden of disease over time,
- to identify emerging problems, and outbreaks or clusters of disease,
- to evaluate the effectiveness of policies and programmes.

Laboratory-based surveillance

The number of cases of STIs reported through the clinic-based surveillance system underestimates the true burden of disease in New Zealand because a substantial percentage of STIs are diagnosed by other health care providers, particularly primary health care practitioners. Laboratories receive specimens from all health providers, and so provide a very useful source of data for those STIs where all or most diagnoses rely on a positive laboratory test.

Laboratory-based surveillance of gonorrhoea and chlamydia began in the Waikato and Bay of Plenty regions in 1998, the Auckland region in 1998 (gonorrhoea) and 2001 (chlamydia), and gradually extended to all diagnostic laboratories across New Zealand starting in 2004.

Improvements to the reporting of laboratory surveillance data were implemented during 2009. These improvements have enabled the reporting of population-based rates of chlamydia and gonorrhoea for many DHBs and estimates of national rates based on the data from these DHBs. 2013 was the first year in which all DHBs (except Northland for gonorrhoea) provided STI surveillance data for a full year. 2015 was the first year in which all DHBs provided data for a full year for both chlamydia and gonorrhoea (see Appendix D: 2015 participation maps).

Since 2013, ESR has worked with laboratories on further measures to enhance the surveillance of STIs. This extended surveillance to all specimens tested for most laboratories, enabling testing and positivity rates in different population groups to be analysed. ESR also collected NHIs for all laboratory test results, allowing the ethnicity of those having STI tests to be determined. Analysis of this ethnicity data is presented in this report.

Clinic-based surveillance

Sexual health clinics (SHCs) have participated in STI surveillance since 1988, with ESR taking a national co-ordinating role from 1995. Initially SHCs reported the number of cases seen with the following diseases: syphilis, gonorrhoea, chlamydia, warts (1st attack), herpes (1st attack), trichomoniasis, chancroid, lymphogranuloma venereum (LGV) and granuloma inguinale (GI). SHCs also reported the number of new clinic patients (patients who had not visited a clinic in the past three months) and used this to calculate a clinic-based disease rate. Demographic information for cases (age, sex and ethnicity) has been reported since 1996.

Clinic-based surveillance progressed markedly in 1998. The Ministry of Health contracted ESR to implement the expansion of the STI surveillance system. Data collection from family planning clinics (FPCs) and student and youth health clinics (SYHCs) was added to provide a more comprehensive picture of the STI disease burden in New Zealand. An expert committee was convened to advise on the implementation process. During this time the current case definitions were adopted; trichomoniasis was removed from the list of reported STIs; non-specific urethritis (NSU, males only) was added; and the site of infection began to be specified for cases of chlamydia and gonorrhoea. Denominator data was standardised – all clinics were requested to provide the total number of clinic visits per month, by age, sex and ethnicity. This allowed clinic-specific disease rates to be calculated, though visits could be for any reason, including non-sexual health consultations.

In 2010, the Ministry, the New Zealand Sexual Health Society (NZSHS) and ESR collaborated with other stakeholders to identify priorities for addressing gaps in the current approach to STI surveillance. This led to changes in both clinic- and laboratory-based STI surveillance. Most immediate was the change to how data is reported in the annual and quarterly reports. For clinic-based surveillance, this included stopping the practice of calculating clinic disease rates using visit data as the denominator. Visit data are now provided separately to disease count data (see Appendix A).

Surveillance via SYHCs was discontinued in 2012 as it was recognised this data did not add to the information now provided by the other clinics and laboratories.

Enhanced syphilis surveillance

Historically, surveillance of syphilis in New Zealand has been part of the STI sentinel system, using data provided on a voluntary basis by SHCs, FPCs and SYHCs to ESR. In this surveillance almost all reported cases each year are from SHCs [4]. This sentinel system does not collect information on sexual behaviour or other possible risk factors.

Between 2002 and 2006 several studies from different areas in New Zealand showed an increased risk of disease in MSM and the NZSHS decided a pilot project for national enhanced syphilis surveillance using data from SHCs was needed [5-8]. Subsequently the AIDS Epidemiology Group (AEG) in Dunedin offered to undertake this project and published a report in 2011 [5]. Data was also collected by the AEG in 2012 but a full report was not published. However a cluster of syphilis cases among young MSM in Christchurch was recognised and reported [9].

In 2013 the Ministry asked ESR to take over the reporting of enhanced syphilis surveillance. Decisions on the data collected by ESR are guided by a steering group of NZSHS representatives. In addition to the usual demographic data of age, sex and ethnicity, information on sexual behaviour and a range of other risk factors is collected. Enhanced syphilis surveillance analyses in this report draw on data collected by AEG for 2011 and 2012 and by ESR from 2013.

DATA COLLECTION

Laboratories

The participating laboratories (see Appendix C) previously reported anonymised 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. The diagnostic tests used by each laboratory may differ. The implementation of improved STI data collection via a SharePoint portal website has allowed laboratories to provide more detailed data in a secure way. Each month, laboratories upload their data to the Sharepoint portal website. Laboratory data are processed and collated into a database by ESR staff.

Data provided includes National Health Index (NHI) numbers, which are stored on the Sharepoint portal website. NHI numbers are used to retrieve Level 2 ethnicity information from the Ministry of Health, to update date of birth and sex where data is missing and to assign a unique identifier before deleting the NHIs from the Sharepoint portal.

Prior to 2013 it was not possible to determine the total number of positive individuals and specimens. Attempts had been made to remove duplicates from the data where one patient may have had multiple positive specimens. If this was not possible, it was assumed that each laboratory-confirmed specimen was equivalent to one laboratory-confirmed patient. As it is possible for one patient to have more than one positive specimen taken for the one STI episode, the true incidence may be less than that reported for years 2009–2012. Use of unique identifiers since January 2013 has allowed for the exclusion of repeat tests for an individual within a defined episode period (as outlined in Table 2).

In previous years, data on ceftriaxone, ciprofloxacin, penicillin and tetracycline resistance among *N. gonorrhoeae* isolates were collected annually from community and hospital diagnostic microbiology laboratories, and collated at ESR to provide national estimates of resistance to these four antibiotics. Since 2013, laboratories uploading data to the Sharepoint portal website have also included this data where the testing has been carried out and is available. LabPLUS (from the Auckland region) did not provide data in the new format for a full year in 2013, and Medlab Taranaki has not yet provided data in the new format.

Table 2. Episode periods

Disease		Episode period
Chlamydia		< 6 weeks after a previous positive test
Gonorrhoea	Culture	< 10 days after previous positive test (it does not matter if previous positive test was a NAAT or culture)
	NAAT	< 3 weeks after the previous positive test (it does not matter if previous positive test was a NAAT or culture)

Clinics

Clinics record anonymised data on the age, sex and ethnicity (Māori, Pacific peoples, European, Other, or Unknown) for all individuals meeting one or more of the STI surveillance case definitions (see Appendix B). Each month, clinics send the demographic data relating to their cases and the total number of clinic visits either directly to ESR or to a regional co-ordinator. Data is either entered directly into the national STI surveillance database by ESR staff or entered into a regional STI surveillance database by a regional co-ordinator. Data from regional STI surveillance databases is sent electronically to ESR each month where it is merged with data on the national STI surveillance database.

As noted in "Surveillance in New Zealand" the list of STIs under clinic-based surveillance and the case definitions for these infections has varied over time. The infections currently under surveillance are listed in Table 3.

For the enhanced syphilis surveillance, all SHCs are asked to complete a questionnaire for each case of infectious syphilis. The original questionnaire (2011) was updated in 2013 (see Appendices E and F for questionnaires). Cases include those initially diagnosed in other settings and referred to SHCs for management. The case data provided is anonymised by use of an AIDS code or SHC patient ID code. The codes are used to check for duplication.

Table 3. STIs under clinic-based surveillance

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

ANALYTICAL METHODS

All results and analyses are based on data submitted prior to 13 September 2016 except for the enhanced syphilis surveillance analysis (see Enhanced syphilis surveillance analytical methods). Any data submitted after this date will be reflected in subsequent annual reports.

STI surveillance data from the above-mentioned sources are stored in separate clinic and laboratory databases. Any identifiable information is removed or encrypted before this storage occurs. The data are extracted and analysed using Microsoft Access, SQL, Excel and R [10].

STI case numbers

While, in clinic-based surveillance, data is collected on both probable and confirmed cases for chlamydia, gonorrhoea, chancroid, GI and LGV, case numbers presented in this report relate to confirmed cases of these diseases only. Clinic trends are presented using case numbers.

STI rates

Rates have been generated for laboratory-based STI surveillance data. In previous years (before 2011) clinic-based disease rates were also calculated using the total number of clinic visits as the denominator.

Calculation of rates

Rates have not been calculated where there were fewer than five cases in any category. Calculating rates from fewer than five cases produces rates that are unstable for the purpose of comparison. Care should also be exercised when interpreting and comparing rates based on fewer than 20 cases.

Readers are also advised to consider the absolute number of cases in the categories analysed by rate because categories with the highest rates may sometimes involve a relatively small proportion of the overall disease burden.

Numerator data

Laboratory rates: the total number of laboratory-confirmed cases reported after exclusion of repeat tests for an individual within a defined episode period (Table 2).

Testing rates: the total number of tests for chlamydia and gonorrhoea.

Testing coverage rates (people tested): the number of people tested based on NHI and patient ID numbers, and using the age and location of the individual at the time of the first test of the year. These rates do not include multiple tests within the year for the same individual.

Test positivity: the total number of positive tests including positive repeat tests.

Ethnicity analysis of laboratory data: is based on all DHBs that provided data in the new format. Where an NHI number was not provided or could not be linked to a record the ethnicity was included in the Unknown group.

Denominator data

Laboratory and testing rates: the denominator for the calculation of rates is the 2015 mid-year population estimates published by Statistics New Zealand.

Test positivity: the total number of specimens tested including all repeat tests.

Ethnicity analysis of laboratory data: the denominator data is based on the proportion of people in each ethnic group from the 2013 Census ‘usually resident population’ applied to the 2015 mid-year population estimates from Statistics New Zealand. Ethnicity is prioritised in the following order: Māori, Pacific peoples, Asian, Middle Eastern/Latin American/African (MELAA), European or Other (including New Zealander) ethnic groups.

Statistical tests

The method used to calculate the confidence intervals for the estimated national rates in the five-year trend analyses adjusts for the fact that we had laboratory data from most, but not all DHBs prior to 2015 [11]. The method also takes into account clustering within DHBs, in other words there are DHB-level factors such as reporting, use of diagnostic tests and opportunities for surveillance that will impact on the data.

Trends

As clinic and laboratory participation vary over time, reporting periods have been selected to provide the longest period of time for a relatively stable set of laboratories or clinics.

A five-year period (2011–2015) has been reported for laboratory surveillance trends and clinic trends, except for the long term trend analyses (limited to three regions) where an 18-year period (1998–2015) has been reported.

DHB reporting criteria: laboratories

For a DHB to be included in the analyses, all laboratories servicing that DHB must have participated in the surveillance programme (unless the non-participating laboratory was a hospital laboratory undertaking a small proportion of the DHB's STI testing).

In addition, the following participation criteria had to be met for each analysis type:

1. 2015 analysis: each laboratory in the DHB must have provided data for all 12 months of 2015. Age group and sex analysis for test positivity as well as all ethnicity analyses excluded Taranaki DHB as their data was not collected in the new format.
2. Trend analyses (national, age and sex, and test positivity): from 2011 to 2012 analyses are based on data from 15 DHBs. From 2013 to 2014 analyses are based on data from all DHBs for chlamydia and all DHBs except Northland for gonorrhoea. 2013 data was estimated for three quarters for LabPLUS in the Auckland region as data was only provided in the new format for the last quarter of the year (October to December 2013). The estimation was carried out by multiplying the quarter provided by three. In 2015 all DHBs were included in the analyses for both chlamydia and gonorrhoea.
3. Individual DHB trend analysis: for a DHB to be included in this analysis, all laboratories in the selected DHB must have provided data for the 12 months of each year for at least three of the last five years.
4. Specimen site analysis (in addition to the above criteria): laboratories with greater than 15% of specimen sites recorded as unknown were excluded from the analysis.

The following DHBs have been combined for reporting purposes: Auckland, Waitemata and Counties Manukau DHBs (Labtests), and Hutt Valley and Capital & Coast DHBs (Aotea Pathology). Table 4 summarises which DHBs met the inclusion criteria for the various analyses.

Table 4. Selected/excluded DHBs by analysis type and STI, 2015

District Health Board	Annual analysis 2015		Trend analyses 2011 – 2015		Individual DHB trend analysis	
	Chlamydia	Gonorrhoea	Chlamydia	Gonorrhoea	Chlamydia	Gonorrhoea
Northland	✓	✓	✓	✓[c]	✓	✓[c]
Auckland region[a]	✓	✓	✓	✓	✓	✓
Waikato	✓	✓	✓	✓	✓	✓
Lakes	✓	✓	✓	✓	✓	✓
Bay of Plenty	✓	✓	✓	✓	✓	✓
Tairawhiti	✓	✓	✓	✓	✓	✓
Taranaki	✓	✓	✓	✓	✓	✓
Hawke's Bay	✓	✓	✓	✓	✓	✓
Whanganui	✓	✓	✓	✓	✓	✓
MidCentral	✓	✓	✓	✓	✓	✓
Wellington region[b]	✓	✓	✓[d]	✓	✓	✓
Wairarapa	✓	✓	✓	✓	✓	✓
Nelson Marlborough	✓	✓	✓[d]	✓[d]	✓	✓
West Coast	✓	✓	✓	✓	✓	✓
Canterbury	✓	✓	✓[d]	✓[d]	✓	✓
South Canterbury	✓	✓	✓[d]	✓[d]	✓	✓
Southern	✓	✓	✓	✓	✓	✓

[a] Waitemata, Auckland and Counties Manukau DHBs. [b] Hutt Valley and Capital & Coast DHBs.
[c] Data incomplete in 2013 and 2014. [d] Data not available 2011–2012. ✓ = Selected × = Excluded

DHB reporting criteria: clinics

For a DHB to be included in the analyses, all clinics must have provided complete data to ESR for at least 10 out of the 12 months.

Enhanced syphilis surveillance analytical methods

All analyses are based on data submitted prior to 18 July 2016. Any data submitted after this date will be reflected in subsequent annual reports. Data received via email, fax, or post from SHCs are entered via a secure, web-based application called REDCap [12] and are extracted and analysed using Excel. Cases that are diagnosed and followed up by other health care providers are not captured in this report. All SHCs participated in 2015, and all syphilis cases from 2013–2015 were able to be matched and reconciled with syphilis cases reported as part of ESR's sentinel STI surveillance. Readers are advised that syphilis data from 2011–2012 were not reconciled and accordingly the data in the enhanced syphilis surveillance vary from the clinic surveillance for these years.

Basic demographic information such as age or place of diagnosis is reported by sex. Other data presented in this report are categorised by sexual behaviour - men who have sex with men (MSM), females who have sex with males and females (FSMF) and heterosexual.

QUALITY OF SURVEILLANCE DATA

Laboratory participation

In 2015, 42 laboratories across all DHBs in New Zealand voluntarily participated in the STI surveillance programme. As laboratories began supplying data at different times and some gaps in data supply occurred, rates of chlamydia and gonorrhoea for each analysis type were calculated using data from laboratories that met specific selection criteria (see Analytical methods).

Ethnicity data completeness in laboratory surveillance

The level of completeness of ethnicity data is dependent on whether an NHI number is provided at the time of testing. The level of completeness by DHB for chlamydia and gonorrhoea is shown in Table 5 and Table 6 respectively. Interpretation of the ethnicity analyses should consider the varying levels of data completeness.

Clinic participation

In 2015, 27 SHCs and 32 FPCs across New Zealand voluntarily participated in the STI surveillance programme. Ninety-five percent (19/20) of DHBs contributed to clinic data. Wairarapa is the only DHB that does not provide clinic data due to not having either a SHC or a FPC. Tairawhiti DHB only provides SHC data for chlamydia and gonorrhoea. All clinics provided complete data to ESR for at least 10 of the last 12 months (the required number of months to be included in the analysis). FPCs included some clinics based in schools or tertiary institutions that may have been closed during holiday periods. All SHCs participated in the enhanced surveillance of infectious syphilis.

Table 5. Chlamydia laboratory ethnicity data completeness by DHB, 2015

DHB	Tests without NHI (%)	Positive tests without NHI (%)
Northland	15.3	21.7
Auckland region[a]	2.1	3.3
Waikato	8.3	12.6
Lakes	12.8	20.6
Bay of Plenty	28.5	41.0
Tairawhiti	23.9	27.5
Taranaki	-	-
Hawke's Bay	0.5	0.6
Whanganui	7.2	8.7
MidCentral	11.0	13.1
Wellington region[b]	9.3	10.0
Wairarapa	2.7	3.2
Nelson Marlborough	3.2	3.0
West Coast	18.9	35.7
Canterbury	7.4	9.1
South Canterbury	8.0	14.2
Southern	3.4	7.2
Total[c]	**6.6**	**10.0**

[a] Waitemata, Auckland and Counties Manukau DHBs.
[b] Hutt Valley and Capital & Coast DHBs.
[c] Excludes Taranaki DHB.

Table 6. Gonorrhoea laboratory ethnicity data completeness by DHB, 2015

DHB	Tests without NHI (%)	Positive tests without NHI (%)
Northland	18.1	36.1
Auckland region[a]	2.0	4.3
Waikato	7.8	28.9
Lakes	13.0	28.0
Bay of Plenty	28.5	47.9
Tairawhiti	23.3	33.1
Taranaki	-	-
Hawke's Bay	0.5	1.0
Whanganui	7.1	20.6
MidCentral	11.0	43.0
Wellington region[b]	9.1	27.8
Wairarapa	2.5	0.0
Nelson Marlborough	3.2	4.3
West Coast	18.9	50.0
Canterbury	0.6	16.3
South Canterbury	7.3	0.0
Southern	3.5	18.0
Total[c]	**6.4**	**14.0**

[a] Waitemata, Auckland and Counties Manukau DHBs.
[b] Hutt Valley and Capital & Coast DHBs.
[c] Excludes Taranaki DHB.

CHLAMYDIA

Chlamydial infection is asymptomatic in approximately 25% of male cases and 70% of female cases [13]. Untreated infection can lead to the development of serious sequelae, including pelvic inflammatory disease (PID), ectopic pregnancy, reactive arthritis and infertility in females and urethritis, epididymo-orchitis, reactive arthritis and infertility in males. Infants born vaginally to infected mothers may be infected during delivery causing neonatal conjunctivitis or pneumonia [14].

KEY FINDINGS: 2015

- Chlamydial infection was the most commonly reported STI in New Zealand (29,404 cases)
- The national chlamydia rate was 640 cases per 100,000 population, a significant increase from 2014 (629 cases per 100,000) but similar to the 2013 rate (637 cases per 100,000)
- Between 2011 and 2015, test positivity decreased from 9.0% to 7.4%; during this period the number of specimens tested increased by 45%, with 80% of specimens from females
- Since 2011, Tairawhiti, Lakes and Hawkes Bay DHBs have consistently had the highest chlamydia rates
- More than twice the number of chlamydia cases were reported in females than in males
- The majority of cases (83%) were reported in the 15–29 years age group
- Seventy-ninelaboratory-diagnosed cases of chlamydia were reported in the <1-year age group; 65 cases of these cases had the site of infection reported, all of which were the eye
- In those aged 15–29 years the highest estimated chlamydia rates were reported in the Māori and Pacific peoples ethnic groups
- Testing rates across all age groups, were almost four times higher in females than males, with the highest annual population testing rates reported in those aged 15–29 years.
- Māori females in the 20–24 years age group had the highest annual population testing rate across the ethnic groups (717 tests per 1000 population) but many of these were repeat tests for the same person - only 44.3% of this group received at least one test during 2015
- Annual testing coverage rates in the highest risk age groups suggest that <10% of males and 21–35% of females had at least one annual test
- 71% of cases were diagnosed outside of a sexual health or family planning clinic, most likely in primary care settings

COMMENTARY

There was a small but significant increase in the national chlamydia rate following relatively stable rates from 2011–2014. The much higher rate reported in females is probably due to far lower testing rates in males, suggesting many infections in males remain undiagnosed and untreated. Despite an overall decrease from 2011–2015 in rates for females and males in the 15–19 and 20–24 years age groups, the highest risk age groups remain those aged 15–29 years. However, test positivity for these age groups has not increased despite a small increase in testing rates, suggesting that the increase in incidence may be due to increased diagnosis rather than increasing prevalence. The persisting pattern of infection in babies highlights the need, noted in previous reports, to improve STI screening during pregnancy. Māori and Pacific peoples ethnic groups continue to show a higher burden of disease than other ethnic groups, with higher estimated incidence rates, and test positivity in the 15–29 years age groups compared with national rates. Although testing and coverage rates for Māori females in these age groups, and for Pacific females in the 25–29 years age group, are higher than the national average, the rates for Māori and Pacific males in these age groups are lower than the female rates but with much higher test positivity rates. This may be due to reduced access to healthcare services and under-diagnosis in the males and suggests that they may be a pool for re-infection within their social networks.

LABORATORY SURVEILLANCE OF CHLAMYDIA

NATIONAL AND DHB ANALYSIS

Annual 2015 analysis

In 2015 there were 29,404 laboratory-confirmed cases of chlamydia. The national chlamydia rate was 640 cases per 100,000 population, a small but significant increase from the 2014 national rate of 629 per 100,000. Case numbers and population rates for each DHB for the past two years are shown in Table 7.

Table 7. Number of laboratory-confirmed chlamydia cases and chlamydia rates by DHB, 2014–2015

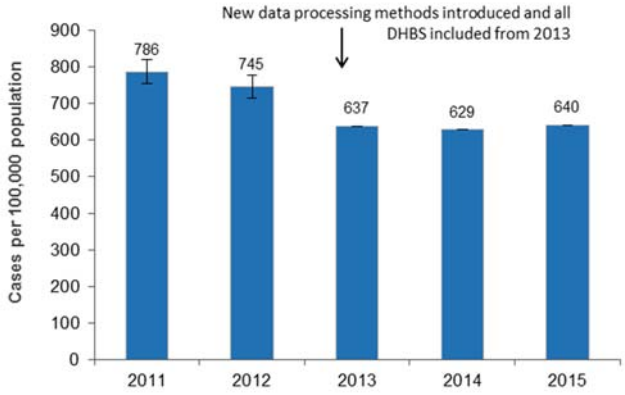
DHB	Number of laboratory-confirmed cases		Rate per 100,000 population		Rate change[c,d]
	2014	2015	2014	2015	
Northland	1000	1221	602	726	↑
Auckland region[a]	9457	9917	613	625	↑
Waikato	2535	2785	661	713	↑
Lakes	1185	1100	1147	1049	↓
Bay of Plenty	1504	1600	692	722	↑
Tairawhiti	538	544	1143	1152	↑
Taranaki	519	542	451	467	↑
Hawke's Bay	1416	1520	889	950	↑
Whanganui	437	395	702	631	↓
MidCentral	1184	1111	695	646	↓
Wellington region[b]	2615	2653	595	596	↑
Wairarapa	207	211	484	489	↑
Nelson Marlborough	707	660	494	456	↓
West Coast	108	130	331	400	↑
Canterbury	2770	2747	539	522	↓
South Canterbury	266	219	458	374	↓
Southern	1893	2049	611	653	↑
Total	**28,341**	**29,404**	**629**	**640**	↑

[a] Waitemata, Auckland and Counties Manukau DHBs. [b] Hutt Valley and Capital & Coast DHBs.
[c] ↓ = significant decrease, ↑ = significant increase, NC = no change, ↓ = not significant decrease, ↑ = not significant increase.
[d] Fisher's exact tests were used to determine statistical significance. Results are considered statistically significant when the P value is less than or equal to 0.05.

Trends in laboratory diagnoses

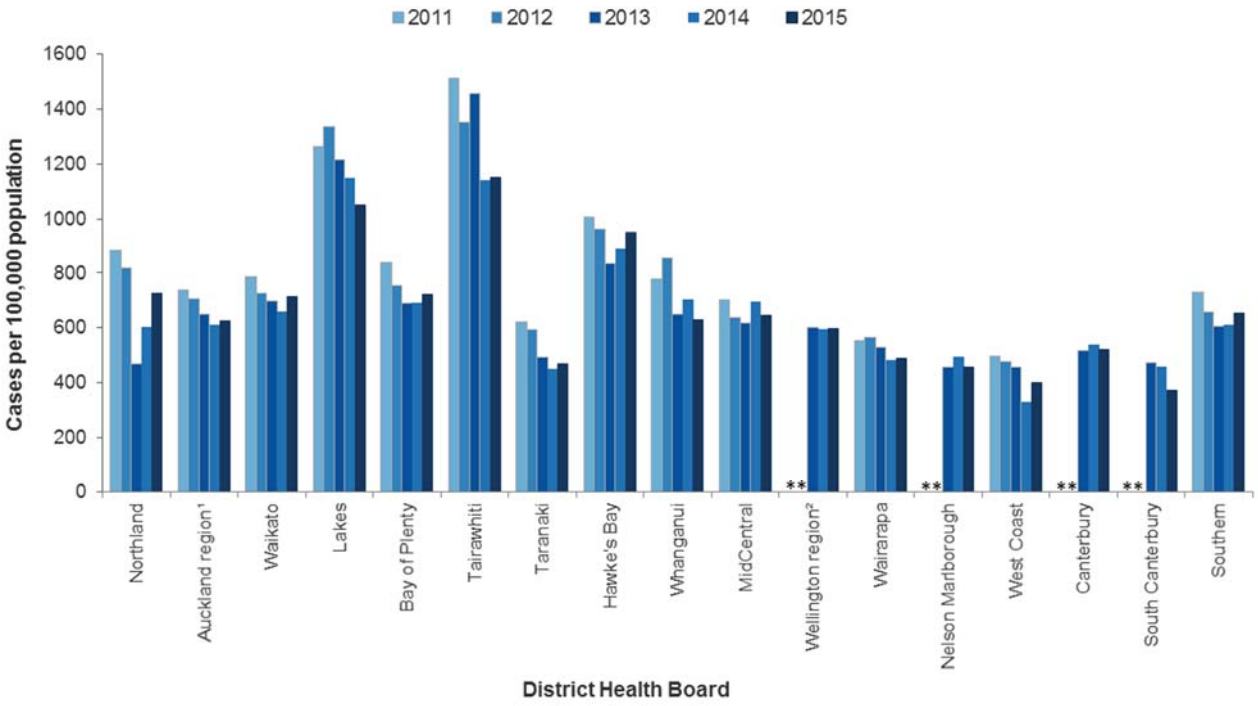
Nationally the population rate of chlamydia significantly decreased between 2011 and 2015, although there was a small but significant increase from 2014 to 2015 (Figure 1). Most DHBs reflected this pattern (Figure 2).

Figure 1. National chlamydia rate, 2011–2015



Note: Estimated rates were calculated for 2011 and 2012 with 95% CIs based on data from 15 DHBs. All DHBs were included from 2013. New data processing methods introduced in 2013 allow for exclusion of repeat tests within a defined period (see Data collection).

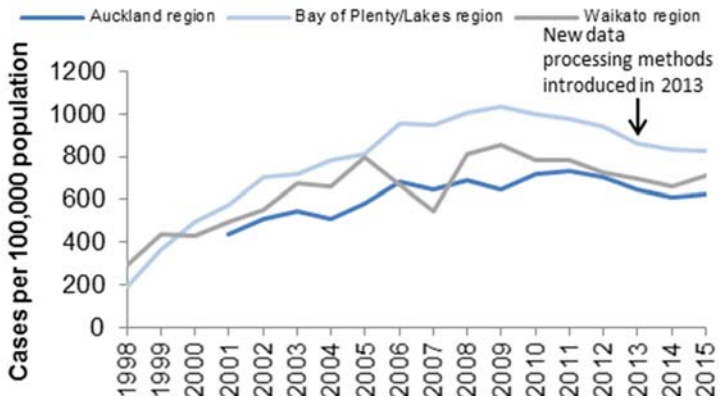
Figure 2. Chlamydia rates by DHB, 2011–2015



[1] Waitemata, Auckland and Counties Manukau DHBs
[2] Hutt Valley and Capital & Coast DHBs.
* Data incomplete.
Note: New data processing methods introduced in 2013 allow for exclusion of repeat tests within a defined period (see Data collection).

Longer term trend analysis based on a limited number of DHBs show that prior to 2011 rates had generally been increasing (Figure 3). Waikato and Bay of Plenty laboratories introduced the more sensitive NAAT testing between 1998 and mid 2000s with Auckland laboratories by 2010.

Figure 3. Chlamydia rates in selected regions, 1998–2015



Note: Auckland region is comprised of Waitemata, Auckland and Counties Manukau DHBs.

AGE AND SEX DISTRIBUTION OF LABORATORY-CONFIRMED CASES

2015 analysis

Age was recorded for 99.5% and sex for 99.8% of laboratory-confirmed chlamydia cases. The national rate for females (884 per 100,000 population, 20,671 cases) was more than twice the national rate for males (385 per 100,000, 8676 cases). The highest rates of chlamydia in both males and females were reported in Tairawhiti, Lakes and Hawke's Bay DHBs (Table 8).

Table 8. Number of laboratory-confirmed chlamydia cases and chlamydia rates by DHB and sex, 2015

DHB	Number of laboratory-confirmed cases				Rate per 100,000 population		
	Male	Female	Unknown	Total	Male	Female	Total
Northland	322	898	1	1221	392	1045	726
Auckland region[a]	3001	6910	6	9917	385	856	625
Waikato	829	1955	1	2785	433	984	713
Lakes	252	847	1	1100	491	1581	1049
Bay of Plenty	422	1165	13	1600	393	1020	722
Tairawhiti	113	430	1	544	492	1774	1152
Taranaki	152	390	0	542	266	664	467
Hawke's Bay	378	1141	1	1520	490	1377	950
Whanganui	106	289	0	395	347	903	631
MidCentral	357	747	7	1111	426	846	646
Wellington region[b]	791	1845	17	2653	365	808	596
Wairarapa	47	164	0	211	223	741	489
Nelson Marlborough	208	452	0	660	293	613	456
West Coast	34	96	0	130	208	594	400
Canterbury	990	1752	5	2747	375	669	522
South Canterbury	54	165	0	219	187	557	374
Southern	620	1425	4	2049	400	897	653
Total	**8676**	**20,671**	**57**	**29,404**	**385**	**884**	**640**

[a] Waitemata, Auckland and Counties Manukau DHBs. [b] Hutt Valley and Capital & Coast DHBs.

Table 9 presents the number of laboratory-confirmed chlamydia cases, and chlamydia population rates by DHB and age group for 2015. Eighty-three percent (24,282) of positive cases were aged between 15 and 29 years.

Table 9. Number of laboratory-confirmed chlamydia cases and chlamydia rates by DHB and age group, 2015

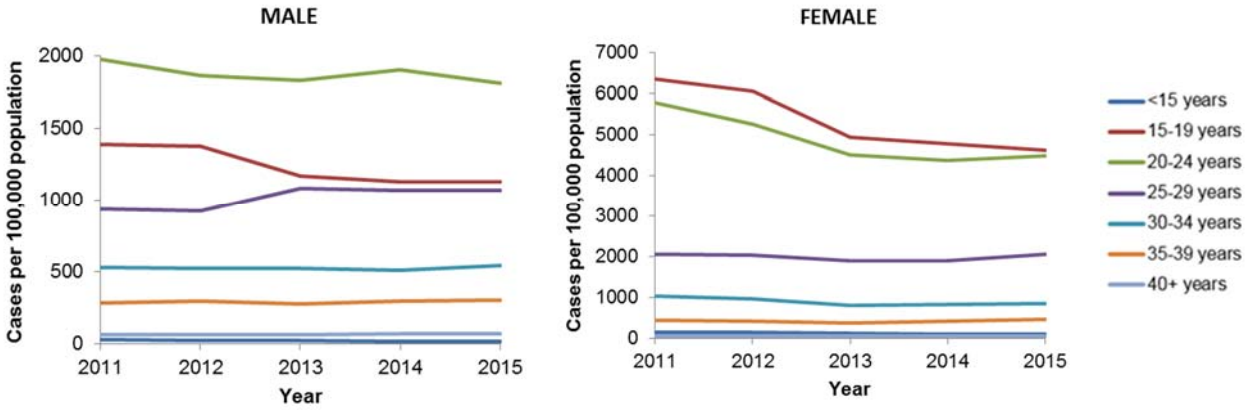
DHB	Age group (years)[c]																			
	0–4		5–9		10–14		15–19		20–24		25–29		30–34		35–39		40+		Unknown		Total	
	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Northland	5	43	0	-	24	202	520	4721	374	4195	158	1980	72	946	34	430	34	38	0	-	1221	726
Auckland region[a]	29	26	0	-	86	86	2350	2109	3603	2738	1927	1500	811	701	473	461	638	94	0	-	9917	625
Waikato	14	50	0	-	26	99	892	3171	1058	3701	431	1733	162	715	93	423	109	60	0	-	2785	713
Lakes	3	-	0	-	38	499	461	6272	331	5188	137	2190	65	1148	32	538	33	66	0	-	1100	1049
Bay of Plenty	3	-	0	-	48	315	578	4000	514	4248	244	2183	100	914	44	381	56	49	13	-	1600	722
Tairawhiti	1	-	0	-	19	490	201	5964	180	6091	85	3154	29	1189	7	272	21	97	1	-	544	1152
Taranaki	2	-	0	-	13	170	160	2139	151	2293	79	1175	27	413	6	90	19	33	85	-	542	467
Hawke's Bay	1	-	1	-	50	440	616	5525	493	5511	184	2316	83	1087	44	517	48	59	0	-	1520	950
Whanganui	4	-	0	-	5	120	153	3792	122	3394	52	1559	19	633	11	354	12	37	17	-	395	631
MidCentral	1	-	0	-	8	73	350	2731	433	3317	175	1641	66	706	33	369	33	40	12	-	1111	646
Wellington region[b]	4	-	0	-	35	130	738	2492	1044	2820	440	1366	176	581	83	278	133	66	0	-	2653	596
Wairarapa	1	-	0	-	2	-	82	3004	68	3009	28	1455	14	698	9	421	7	29	0	-	211	489
Nelson Marlborough	2	-	0	-	5	55	262	3034	204	3024	93	1349	34	483	21	273	39	48	0	-	660	456
West Coast	1	-	0	-	1	-	49	2753	51	2898	17	963	5	292	1	-	3	-	2	-	130	400
Canterbury	4	-	0	-	34	109	792	2173	966	2475	471	1278	197	596	106	334	172	68	5	-	2747	522
South Canterbury	0	-	0	-	0	-	82	2234	74	2403	31	1060	16	585	8	265	7	21	1	-	219	374
Southern	4	-	0	-	18	97	633	2802	811	3140	334	1714	129	699	54	301	64	42	2	-	2049	653
Total	**79[d]**	**26**	**1**	-	**412**	**141**	**8919**	**2816**	**10,477**	**3096**	**4886**	**1565**	**2005**	**699**	**1059**	**387**	**1428**	**66**	**138**	**-**	**29,404**	**640**

[a] Waitemata, Auckland and Counties Manukau DHBs.
[b] Hutt Valley and Capital & Coast DHBs.
[c] Rates have not been calculated where there were fewer than five cases in any category.
[d] All cases under one year of age.

Trends in age and sex distribution of chlamydia

Between 2011 and 2015 the trend for chlamydia rates varied by age group and sex (Figure 4). Note the difference in scale. Although the rates for females were highest in the 15–19 years age group throughout this period, there was a non-significant increase in rates from 2014 to 2015 in both the 20–24 and 25–29 years age groups.

Figure 4. Chlamydia rates by age group and sex, 2011–2015



Note: Estimated rates were calculated for 2011 and 2012 based on data from 15 DHBs. All DHBs were included from 2013. New data processing methods introduced in 2013 allow for exclusion of repeat tests within a defined period (see Data collection).

ETHNICITY DISTRIBUTION OF LABORATORY-CONFIRMED CASES

2015 analysis

Ethnicity information was available for 87.7% of chlamydia cases. The highest estimated national rates were seen in the Māori ethnic group for both males (723 per 100,000, 1933 cases) and females (2566 per 100,000, 7229 cases) (Table 10). Seventy-seven chlamydia cases were aged less than one year, and distribution of these cases across the ethnic groups is presented in Table 11.

Table 10. Number of laboratory-confirmed chlamydia cases and chlamydia rates by ethnicity and sex, 2015

Ethnicity	Number of laboratory-confirmed cases[a]				Rate per 100,000 population[a]		
	Male	Female	Unknown	Total	Male	Female	Total
Māori	1933	7229	4	9166	723	2566	1670
Pacific peoples	985	2883	2	3870	702	2020	1367
Asian	388	849	2	1239	170	355	265
MELAA	130	127	0	257	550	576	563
European or Other	3483	7300	8	10,791	244	492	371
Unknown	1605	1893	41	3539	-	-	-
Total	**8524**	**20,281**	**57**	**28,862**	**388**	**890**	**645**

[a] All counts and rates exclude Taranaki DHB.

Table 11. Specimen site of laboratory-confirmed chlamydia cases in the less than one year age group by ethnicity, 2015

Ethnicity	Specimen site of laboratory-confirmed cases[a]			
	Eye	Other[b]	Unknown	Total
Māori	29	1	5	35
Pacific peoples	16	1	0	17
Asian	4	0	1	4
MELAA	1	0	0	1
European or Other	13	0	3	16
Unknown	2	1	0	3
Total	**65**	**3**	**9**	**77**

[a] All counts exclude Taranaki DHB.
[b] Site not further specified in laboratory result.

Table 12 presents the number of laboratory-confirmed chlamydia cases, and chlamydia rates by ethnic group and sex for the age groups with the highest chlamydia rates for 2015 (15–19 years, 20–24 years and 25–29 years). Within these age groups the highest rates occurred in the Māori and Pacific peoples ethnic groups for both males and females. Rates amongst females were consistently higher than those of their male counterparts, and rates for female Māori were more than twice the estimated national rate in all three age groups.

Table 12. Number of laboratory-confirmed chlamydia cases and chlamydia rates by ethnicity, age group and sex, 2015

Ethnicity	Age group (years)[a]																	
	15–19						20–24						25–29					
	Cases			Rate per 100,000 population			Cases			Rate per 100,000 population			Cases			Rate per 100,000 population		
	Male	Female	Total[b]	Male	Female	Total[b]	Male	Female	Total[b]	Male	Female	Total[b]	Male	Female	Total[b]	Male	Female	Total[b]
Māori	644	2813	3459	2390	11,082	6610	659	2286	2947	2780	9549	6185	315	1069	1384	1770	5280	3638
Pacific peoples	265	704	969	1841	5057	3422	381	1147	1529	2821	8554	5681	182	570	753	1672	5170	3437
Asian	24	125	149	134	776	438	109	263	373	411	1206	772	95	194	290	344	708	527
MELAA	8	27	35	445	1684	1029	37	47	84	1475	2352	1864	38	34	72	1351	1327	1339
European or Other	605	2546	3154	667	2994	1795	1378	2810	4193	1463	3158	2289	667	992	1659	806	1194	1001
Unknown	277	711	993	-	-	-	567	627	1200	-	-	-	340	306	649	-	-	-
Total	**823**	**6926**	**8759**	**1142**	**4630**	**2833**	**3131**	**7180**	**0,326**	**1821**	**4489**	**3112**	**1637**	**3165**	**4807**	**1076**	**2065**	**1574**

[a] All counts and rates exclude Taranaki DHB.
[b] Includes unknown sex.

TEST POSITIVITY AND POPULATION TESTING RATES

2015 analysis by DHB, age group and sex

The population testing rate was 93 tests per 1000 population, and 7.3% of all tests were positive. However, specimen counts did not exclude repeat samples from the same individual.

Although the highest population testing rates were in Lakes DHB, and the Auckland and Wellington regions, Tairawhiti and Hawke's Bay DHBs had the highest test positivity (percentage of specimens that tested positive) (Table 13).

Table 13. Number of specimens tested for chlamydia, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory-confirmed cases by DHB, 2015

DHB	Total specimens	Tests per 1000 population	Test Positivity (%)[a]	Number of laboratory–confirmed cases [b]
Northland	12,484	74	10.3	1221
Auckland region[c]	166,717	105	6.5	9917
Waikato	33,672	86	8.6	2785
Lakes	11,856	113	9.7	1100
Bay of Plenty	18,532	84	9.1	1600
Tairawhiti	4112	87	13.5	544
Taranaki	8811	76	6.8	542
Hawke's Bay	13,147	82	12.4	1520
Whanganui	4314	69	9.6	395
MidCentral	12,927	75	9.1	1111
Wellington region[d]	45,157	101	6.4	2653
Wairarapa	2481	57	8.8	211
Nelson Marlborough	9365	65	7.4	660
West Coast	2089	64	6.7	130
Canterbury	46,005	87	6.5	2747
South Canterbury	3494	60	6.5	219
Southern	30,152	96	7.2	2049
Total	**425,315**	**93**	**7.4**	**29,404**

[a] Calculated using the number of positive specimens (includes repeat tests).
[b] Excludes repeat tests.
[c] Waitemata, Auckland and Counties Manukau DHBs.
[d] Includes Hutt Valley and Capital & Coast DHBs.

The national testing rate for males was 38 tests per 1000 population, whereas the rate for females was 146 per 1000. The highest population testing rates were reported in the 20–24 years age group for both males and females (Table 14).

In general males had higher test positivity compared with females, which needs to be interpreted in the context of their lower testing rates. For both sexes test positivity was highest in the 15–19 years age group (19.4% and 14.4%, respectively).

Table 14. Number of specimens tested for chlamydia, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory-confirmed cases, by age group and sex, 2015

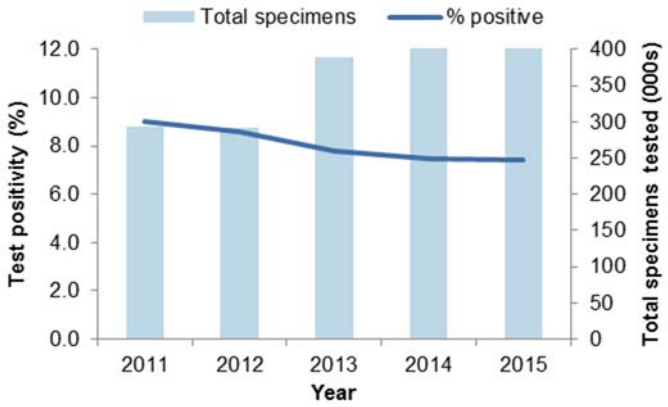
Age Group (years)	Total specimens[a]			Tests per 1000 population[a]			Test Positivity (%)[a,b]			Number of laboratory-confirmed cases[a,c]		
	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]
0–4	719	757	1478	5	5	5	8.5	5.4	6.9	42	35	77
5–9	42	194	237	0	1	1	0.0	0.5	0.4	0	1	1
10–14	329	2877	3212	2	21	11	10.3	14.0	13.6	32	366	399
15–19	9900	51,599	61,558	62	345	199	19.4	14.4	15.2	1823	6926	8759
20–24	21,296	84,688	106,099	124	529	320	15.6	9.1	10.4	3131	7180	10,326
25–29	16,235	59,519	75,806	107	388	248	10.8	5.7	6.8	1637	3165	4807
30–34	10,265	42,628	52,933	76	294	189	7.7	3.1	4.0	742	1232	1978
35–39	6812	30,051	36,886	53	215	138	6.3	2.3	3.1	396	657	1053
40+	18,199	59,652	77,892	18	54	37	4.3	1.3	2.0	706	702	1409
Unknown	147	143	403	-	-	-	10.2	13.3	16.1	15	17	53
Total	**83,944**	**332,108**	**416,504**	**38**	**146**	**93**	**10.9**	**6.6**	**7.4**	**8524**	**20,281**	**28,862**

[a] All counts, rates and percentages exclude Taranaki DHB.
[b] Calculated using the number of positive specimens (includes repeat tests).
[c] Excludes repeat tests.
[d] Includes unknown sex.

Trends in test positivity

Between 2011 and 2015, test positivity based on all specimens decreased from 9.0% to 7.4% (Figure 5). During the same time period the number of specimens tested increased.

Figure 5. Test positivity and total specimens tested for chlamydia, 2011–2015



Note: 15 DHBs provided data in 2011 and 2012. All DHBs provided data from 2013–2015.

Ethnicity analysis of test positivity and population testing rates

For both males and females the highest population testing rate was reported in the MELAA ethnic group (Table 15). However, test positivity was highest in the Pacific peoples ethnic group (23.0%) for males and in the Māori ethnic group (11.8%) for females.

Table 15. Number of specimens tested for chlamydia, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory-confirmed cases by ethnicity and sex, 2015

Ethnicity	Total specimens[a]			Tests per 1000 population[a]			Test Positivity (%)[a,b]			Number of laboratory-confirmed cases[a,c]		
	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]
Māori	10,469	65,858	76,347	39	234	139	19.4	11.8	12.9	1933	7229	9166
Pacific peoples	4645	27,569	32,222	33	193	114	23.0	11.5	13.2	985	2883	3870
Asian	6176	34,997	41,187	27	146	88	6.8	2.6	3.2	388	849	1239
MELAA	1875	5243	7121	79	238	156	7.7	2.6	3.9	130	127	257
European or Other	45,482	175,480	221,030	32	118	76	8.2	4.4	5.2	3483	7300	10,791
Unknown	15,297	22,961	38597	-	-	-	11.1	8.7	9.7	1605	1893	3539
Total	**83,944**	**332,108**	**416,504**	**38**	**146**	**93**	**10.9**	**6.6**	**7.4**	**8524**	**20,281**	**28,862**

[a] All counts, rates and percentages exclude Taranaki DHB. [b] Calculated using the number of positive specimens (includes repeat tests).
[c] Excludes repeat tests. [d] Includes unknown sex.

When further analysed by the highest risk age groups (15–19 years, 20–24 years and 25–29 years) a different pattern of testing rates and test positivity was seen (Table 16 to Table 18). The highest population testing rates occurred in the Māori ethnic group for females and in the Māori or MELAA ethnic group for males. In each of these age groups test positivity was highest for both sexes was in the Pacific peoples ethnic group.

Table 16. Number of specimens tested for chlamydia, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory-confirmed cases by ethnicity and sex in the 15–19 years age group, 2015

Ethnicity	Total specimens[a]			Tests per 1000 population[a]			Test Positivity (%)[a,b]			Number of laboratory-confirmed cases[a,c]		
	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]
Māori	2323	14,605	16,937	86	575	324	29.0	20.7	21.9	644	2813	3459
Pacific peoples	856	3434	4290	59	247	152	34.2	23.1	25.3	265	704	969
Asian	337	1417	1756	19	88	52	7.7	9.2	8.9	24	125	149
MELAA	113	334	447	63	208	131	7.1	9.0	8.5	8	27	35
European or Other	4912	27,125	32,052	54	319	182	12.8	10.0	10.4	605	2546	3154
Unknown	1359	4684	6076	-	-	-	21.4	15.9	17.2	277	711	993
Total	**9900**	**51,599**	**61,558**	**62**	**345**	**199**	**19.4**	**14.4**	**15.2**	**1823**	**6926**	**8759**

[a] All counts, rates and percentages exclude Taranaki DHB. [b] Calculated using the number of positive specimens (includes repeat tests).
[c] Excludes repeat tests. [d] Includes unknown sex.

Table 17. Number of specimens tested for chlamydia, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory-confirmed cases by ethnicity and sex in the 20–24 years age group, 2015

Ethnicity	Total specimens[a]			Tests per 1000 population[a]			Test Positivity (%)[a,b]			Number of laboratory-confirmed cases[a,c]		
	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]
Māori	2808	17,167	19,984	118	717	419	24.6	14.3	15.8	659	2286	2947
Pacific peoples	1281	6936	8222	95	517	305	32.0	18.1	20.2	381	1147	1529
Asian	1287	5082	6372	49	233	132	8.9	5.4	6.1	109	263	373
MELAA	332	952	1285	132	476	285	12.0	5.3	7.0	37	47	84
European or Other	11,779	48,139	59,942	125	541	327	12.5	6.2	7.5	1378	2810	4193
Unknown	3809	6412	10,294	-	-	-	15.7	10.3	12.3	567	627	1200
Total	**21,296**	**84,688**	**106,099**	**124**	**529**	**320**	**15.6**	**9.1**	**10.4**	**3131**	**7180**	**10,326**

[a] All counts, rates and percentages exclude Taranaki DHB. [b] Calculated using the number of positive specimens (includes repeat tests).
[c] Excludes repeat tests. [d] Includes unknown sex.

Table 18. Number of specimens tested for chlamydia, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory-confirmed cases by ethnicity and sex in the 25–29 years age group, 2015

Ethnicity	Total specimens[a]			Tests per 1000 population[a]			Test Positivity (%)[a,b]			Number of laboratory-confirmed cases[a,c]		
	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]
Māori	1814	11,715	13,529	102	579	356	18.1	9.8	10.9	315	1069	1384
Pacific peoples	883	5461	6345	81	495	290	21.5	11.5	12.9	182	570	753
Asian	1593	7404	9000	58	270	164	6.5	2.9	3.6	95	194	290
MELAA	483	1068	1551	172	417	289	8.9	3.4	5.1	38	34	72
European or Other	8328	29,386	37,728	101	354	228	8.7	3.6	4.7	667	992	1659
Unknown	3134	4485	7653	-	-	-	11.5	7.2	9.0	340	306	649
Total	**16,235**	**59,519**	**75,806**	**107**	**388**	**248**	**10.8**	**5.7**	**6.8**	**1637**	**3165**	**4807**

[a] All counts, rates and percentages exclude Taranaki DHB. [b] Calculated using the number of positive specimens (includes repeat tests).
[c] Excludes repeat tests. [d] Includes unknown sex.

Analysis of testing coverage rates (percentage of people tested annually)

Coverage rates were lower than population testing rates for both males and females across the three highest risk age groups. Annual coverage rates for these age groups were between 4.7% and 8.7% for males and between 21.7% and 35.6% for females (Table 19).

The decrease between population testing rates and coverage rates varied by ethnic group. For males, the Asian and MELAA ethnic groups showed the greatest decrease, especially in the 25–29 years age group (over 40%). For females, the Māori and Pacific peoples ethnic groups showed the greatest decreases across the age groups, ranging from 31% to 44%. This suggests many cases have been retested at least once.

Table 19. Percentage of chlamydia specimens tested that were positive, number of tests per 1000 population, and number of people tested per 1000 population by ethnicity, age group and sex, 2015

Ethnicity	Age group (years)[a]																	
	15–19						20–24						25–29					
	Specimens tested positive (%)[b]		Tests per 1000 population		Coverage (%)[c]		Specimens tested positive (%)[b]		Tests per 1000 population		Coverage (%)[c]		Specimens tested positive (%)[b]		Tests per 1000 population		Coverage (%)[c]	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Māori	29.0	20.7	86	575	6.6	32.5	24.6	14.3	118	717	8.6	44.3	18.1	9.8	102	579	7.3	37.8
Pacific peoples	34.2	23.1	59	247	4.3	15.1	32.0	18.1	95	517	7.1	33.3	21.5	11.5	81	495	6.0	34.2
Asian	7.7	9.2	19	88	1.1	6.3	8.9	5.4	49	233	2.9	17.2	6.5	2.9	58	270	3.2	21.4
MELAA	7.1	9.0	63	208	4.6	14.8	12.0	5.3	132	476	8.4	33.4	8.9	3.4	172	417	9.6	31.2
European or Other	12.8	10.0	54	319	4.1	20.5	12.5	6.2	125	541	8.8	36.6	8.7	3.6	101	354	6.8	26.1
Unknown	21.4	15.9	-	-	-	-	15.7	10.3	-	-	-	-	11.5	7.2	-	-	-	-
Total	**19.4**	**14.4**	**62**	**345**	**4.7**	**21.7**	**15.6**	**9.1**	**124**	**529**	**8.7**	**35.6**	**10.8**	**5.7**	**107**	**388**	**7.2**	**28.3**

[a] All percentages and rates exclude Taranaki DHB.
[b] Calculated using the number of positive specimens (includes repeat tests).
[c] Unique tests based on NHI and patient ID numbers.

SPECIMEN SITE

2015 analysis

The site from which the specimen was taken was recorded for 97.8% (30,802/31,508 specimens) of positive specimens. The most common site recorded for males was urine (84.4%) and for females was the vagina (41.7%) (Table 20). A total of 143 positive specimens were from the eye, of which 60.8% were from the 67 reported cases aged less than one year.

Table 20. Percentage of positive chlamydia tests by specimen site and sex, 2015

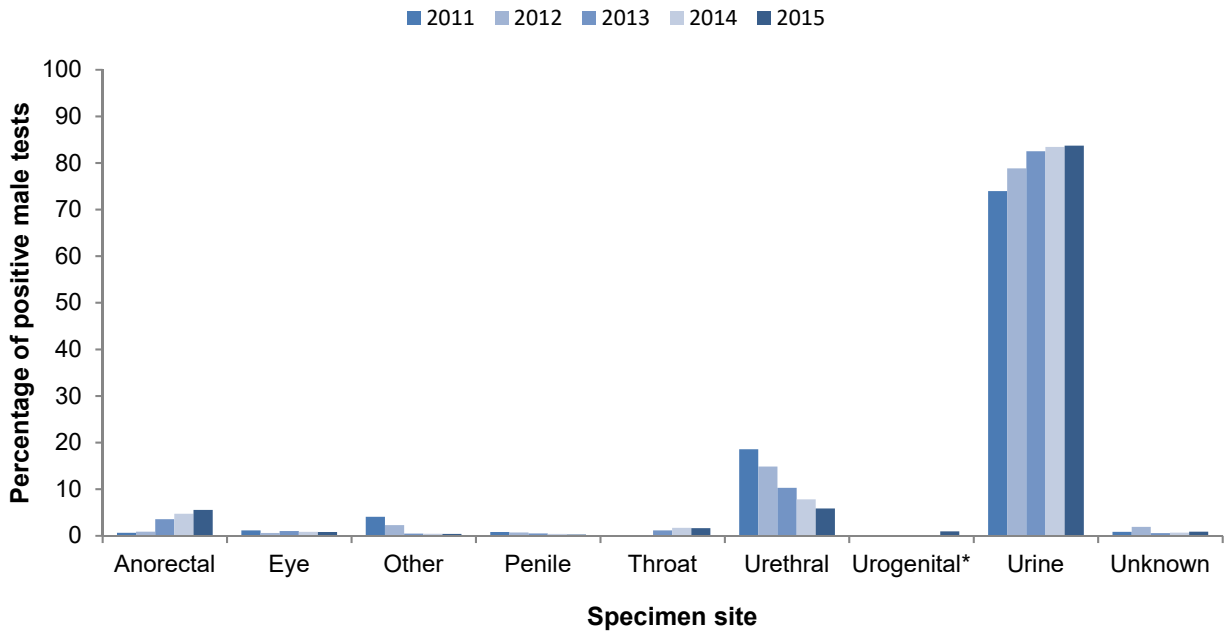
Specimen site	Sex[a]	
	Male (%)	Female (%)
Urethra	5.9	0.6
Vagina	-	41.7
Cervix	-	36.5
Penis	0.3	-
Anorectal	5.6	0.5
Eye	0.8	0.3
Urine	84.4	7.7
Urogenital[b]	0.0	0.1
Throat	1.6	0.2
Other	1.3	12.4

[a] Excludes specimens with unknown sex. [b] Pooled specimens from more than one site.

Trends in specimen site

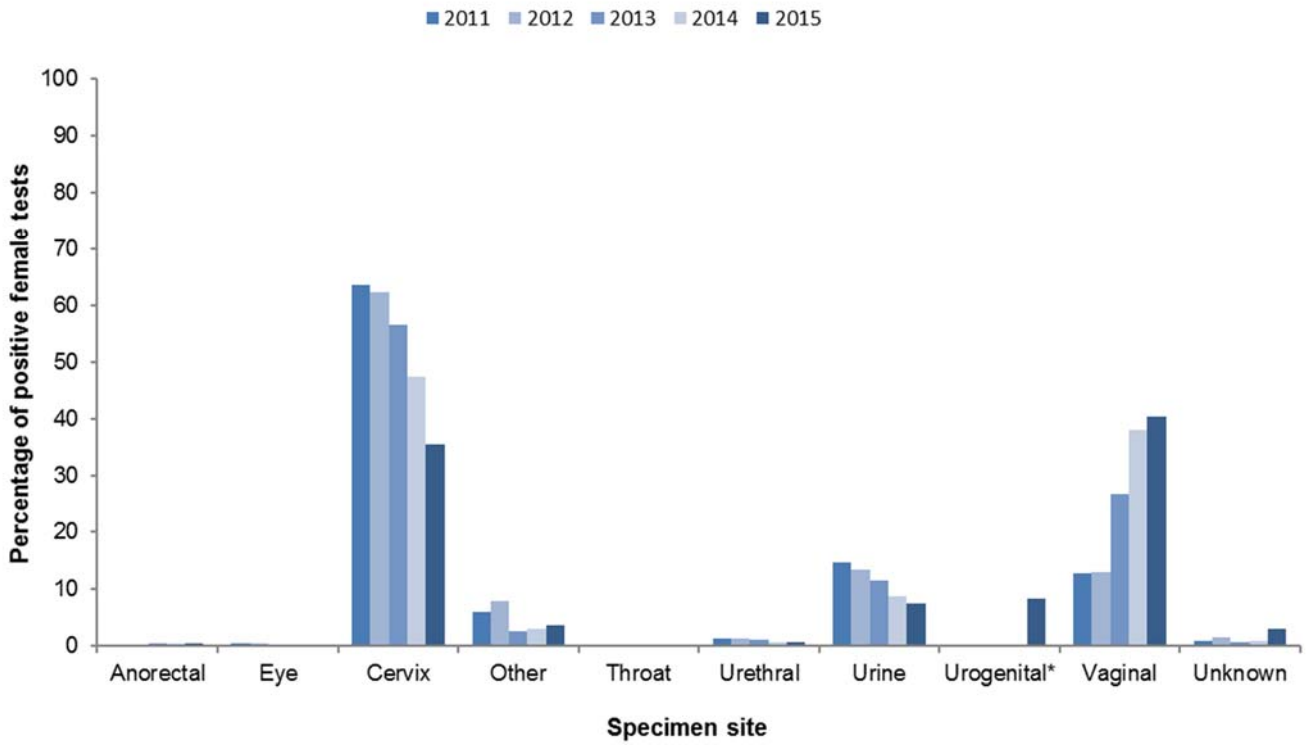
Figure 6 and Figure 7 present the percentage of positive chlamydia tests by specimen site for males and females from 2011 to 2015. The trend of increasing urine/decreasing urethral sites in males and increasing vaginal/decreasing cervical sites in females has continued, but this is expected due to changes in sampling techniques. In contrast, the observed increase in the proportion of positive tests from the anorectal site and throat in males suggests possible changes in risk behaviours.

Figure 6. Specimen site, as a percentage of all positive chlamydia tests in males, 2011–2015



*New category in 2015 as some laboratories now combine urethral and penile or urethral, vaginal, and cervical sites as urogenital

Figure 7. Specimen site, as a percentage of all positive chlamydia tests in females, 2011–2015



*New category in 2015 as some laboratories now combine urethral and penile or urethral, vaginal, and cervical sites as urogenital

CLINIC SURVEILLANCE OF CHLAMYDIA

NATIONAL ANALYSIS

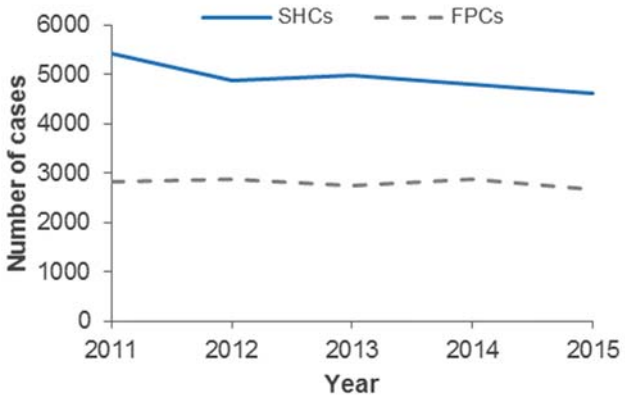
Chlamydia case numbers reported in 2015 (Table 21) decreased in SHCs and FPCs by 3.8% and 7.8% respectively, compared with 2014. This continued the decreasing trends noted since 2011 (Figure 8).

Between 2014 and 2015, the number of clinic visits reported by SHCs increased by 2.6% and clinic visits reported by FPCs decreased by 3.2%. This suggests that there has been a decrease in prevalence of chlamydia among those attending both clinic types, despite an overall national increase in incidence based on laboratory surveillance data (see Laboratory Surveillance of Chlamydia, National and DHB Analysis).

Table 21. Chlamydia case numbers by clinic type, 2015

Clinic type	Total number of cases
SHC	4618
FPC	2659
Total	**7277**

Figure 8. Chlamydia cases numbers by clinic type, 2011–2015



DHB COUNTS

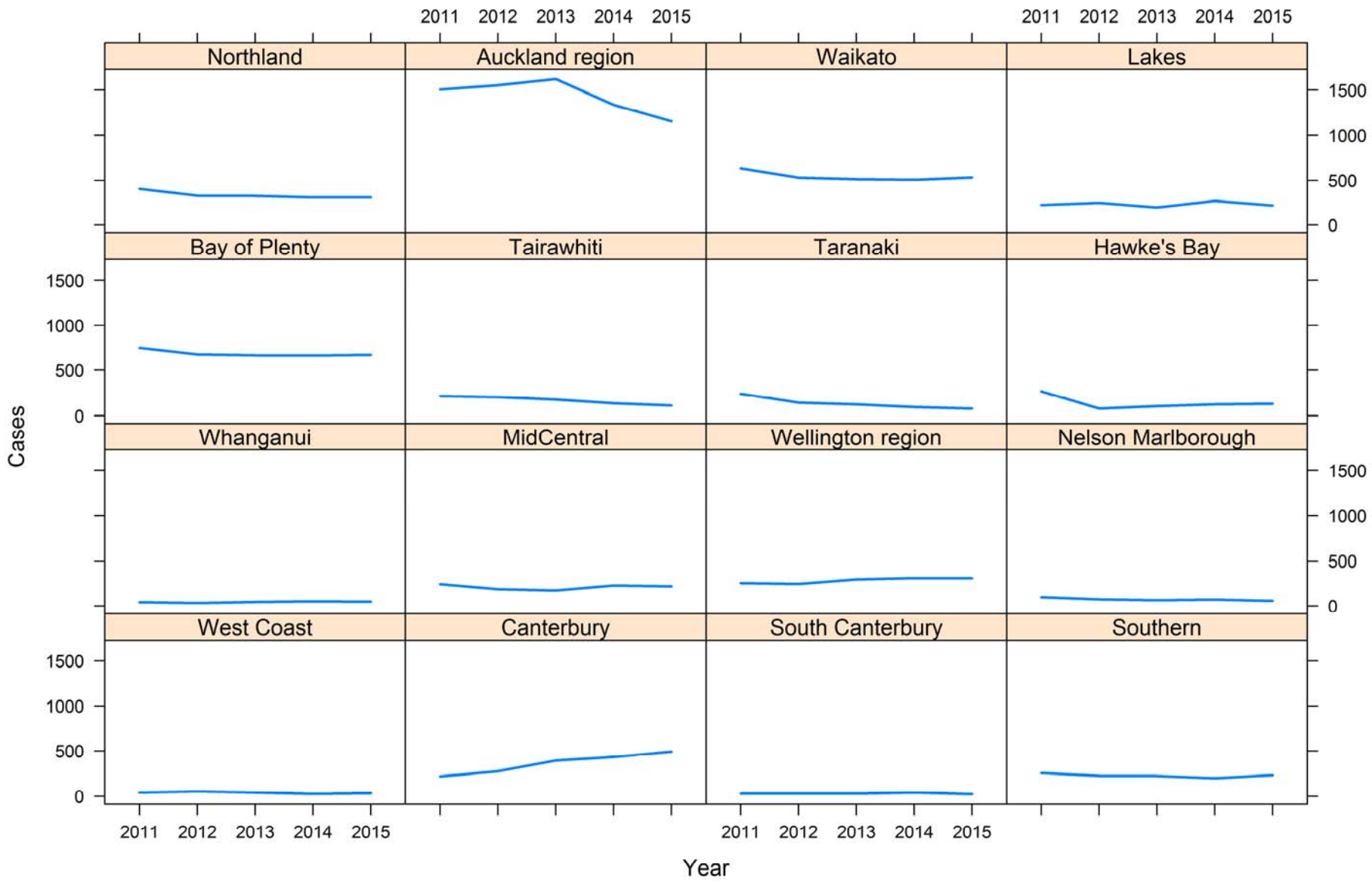
Table 22. Chlamydia case numbers by clinic type and DHB, 2015

DHB[a]	Clinic type		Total
	SHC	FPC	
Northland	309	146	455
Auckland region[b]	1153	720	1873
Waikato	534	391	925
Lakes	220	0	220
Bay of Plenty	673	94	767
Tairawhiti	112	110	222
Taranaki	78	84	162
Hawke's Bay	133	0	133
Whanganui	47	23	70
MidCentral	214	0	214
Wellington region[c]	304	284	588
Nelson Marlborough	57	269	326
West Coast	34	15	49
Canterbury	493	235	728
South Canterbury	24	38	62
Southern	233	250	483

[a] Excludes Wairarapa DHB as no clinic.
[b] Waitemata, Auckland and Counties Manukau DHBs.
[c] Hutt Valley and Capital & Coast DHBs.

Variations in trends of cases reported to SHCs by DHB were seen from 2011 to 2015 (Figure 9). These may reflect patterns in clinic attendance.

Figure 9. Chlamydia case numbers in SHCs by DHB, 2011–2015



SEX, AGE AND ETHNICITY DISTRIBUTION OF CHLAMYDIA CASES

2015 analysis

Sex was recorded for 99.8% of chlamydia cases in 2015. In SHCs, similar case numbers were reported for males and females, however, in FPCs more cases of chlamydia were reported in females. The difference in sex distribution between SHCs and FPCs reflects the high proportion of female attendees at FPCs (in 2015, the male to female ratio of attendees at FPCs was 1:22) (Table 23).

Table 23. Number of cases of chlamydia by sex and clinic type, 2015

Sex	Clinic type	
	SHC	FPC
Male	2383	413
Female	2232	2237
Total[a]	**4618**	**2659**

[a] Includes unknown sex.

Age was recorded for all chlamydia cases in 2015. A large proportion of the reported cases of chlamydia were aged less than 25 years: 57.4% in SHCs and 83.5% in FPCs (Figure 10 and Figure 11).

Figure 10. Confirmed chlamydia cases reported by SHCs by age group and sex, 2015

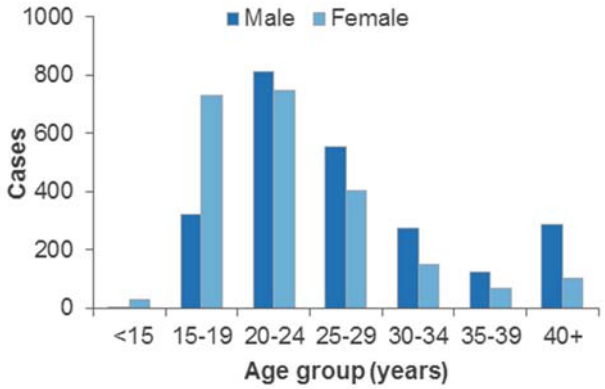
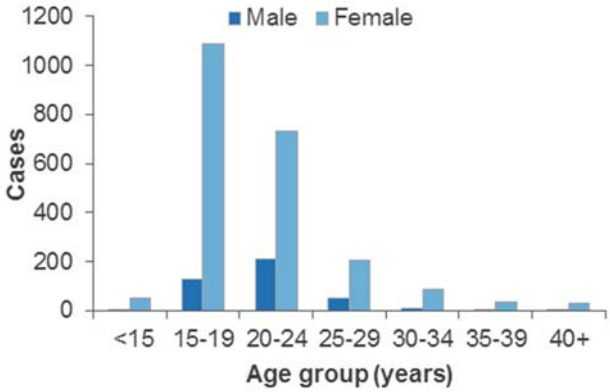


Figure 11. Confirmed chlamydia cases reported by FPCs by age group and sex, 2015



Ethnicity was recorded by SHCs and FPCs for over 98% of chlamydia cases. For males, the highest percentage of cases for both SHCs and FPCs reported European ethnicity (51.3% and 54.2%, respectively). For females, the highest percentage of cases for SHCs reported Māori ethnicity (46.9%) and for FPCs reported European ethnicity (48.5%) (Table 24).

Table 24. Confirmed chlamydia cases by ethnicity, sex and clinic setting, 2015

Ethnicity	SHC		FPC	
	Male	Female	Male	Female
European	1223	853	224	1085
Māori	619	1046	127	755
Pacific peoples	195	153	39	262
Other	296	144	17	103
Unknown	50	36	6	32
Total[a]	**2383**	**2232**	**413**	**2237**

[a] Excludes unknown sex and transgender.

Trends in sex, age and ethnicity

Between 2011 and 2015, the number of confirmed chlamydia cases diagnosed in both SHCs and FPCs decreased in the 15–19 years age group and for females in the 20–24 years age group. This contrasts with small increases seen in the number of confirmed cases diagnosed in both clinic types in the 25–29 years age group. Case numbers for other age groups were fairly stable apart from an increasing trend for males in the 30–34 years and 40 years and over age groups diagnosed in SHCs (Figure 12 and Figure 13).

Figure 12. Chlamydia case numbers in SHCs by sex and age group, 2011–2015

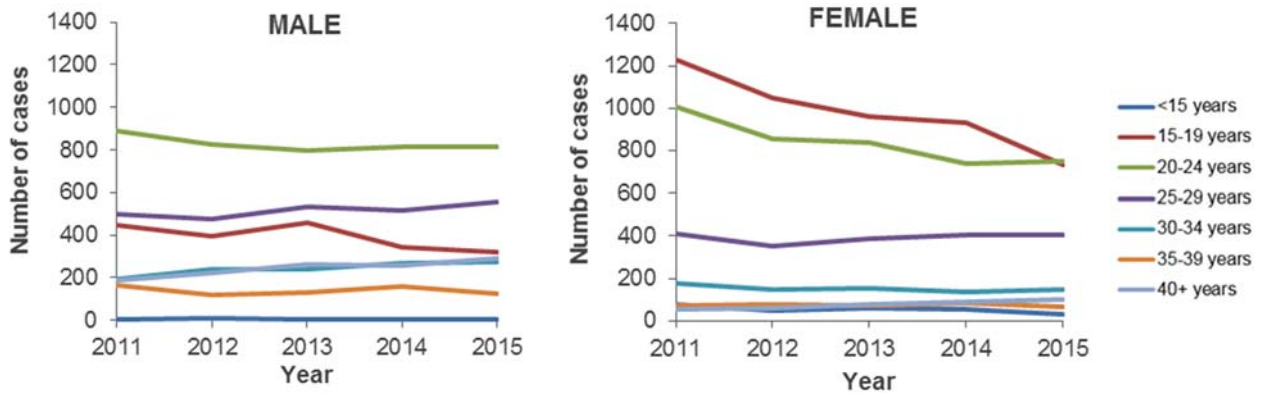
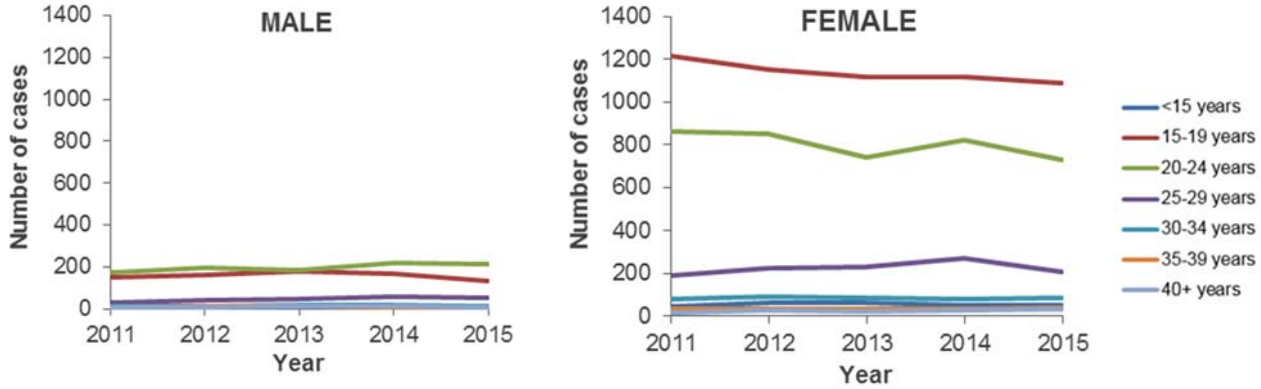


Figure 13. Chlamydia case numbers in FPCs by sex and age group, 2011–2015



In SHCs, there was a decrease in case numbers diagnosed in the European, Māori and Pacific peoples ethnic groups from 2011 to 2015 (Figure 14). This contrasts with the more stable trend seen in all ethnic groups in FPCs (Figure 15).

Figure 14. Chlamydia case numbers reported from SHCs by ethnicity, 2011–2015

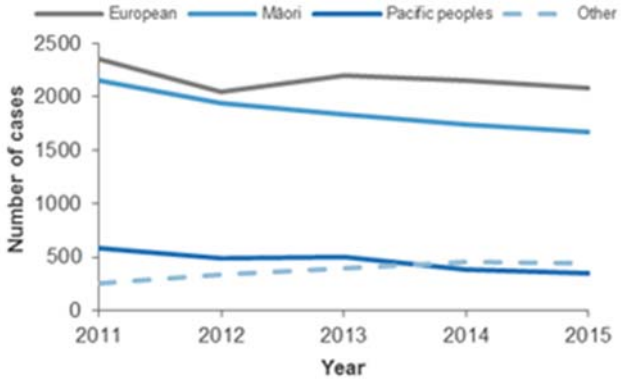
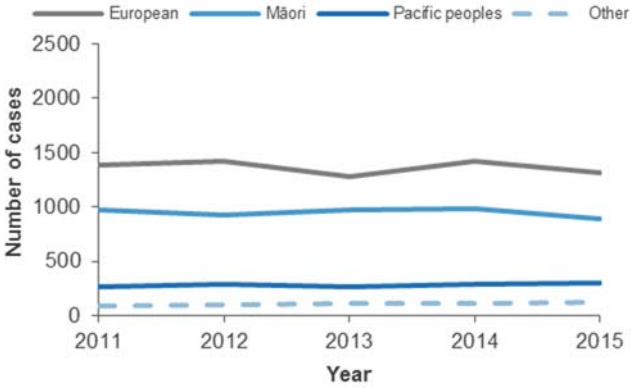


Figure 15. Chlamydia case numbers reported from FPCs by ethnicity, 2011–2015



SITE OF INFECTION

2015 analysis

In 2015, chlamydia cases were most commonly confirmed from a sample taken at a urogenital site in both clinic types: 97.9% of SHC cases and 97.8% of FPC cases (Table 25).

Table 25. Chlamydia case numbers by site of infection and clinic setting, 2015

Site	Clinic type	
	SHC	FPC
Urogenital	4520	2600
Pelvic inflammatory disease/epididymitis	47	58
Other site	75	7
Total	**4618**	**2659**

COMPLICATED INFECTIONS

2015 analysis

Complicated infections (epididymitis in males and pelvic inflammatory disease (PID) in females) were reported for a small number of cases (1.0% in SHCs and 2.2% in FPCs) (Table 25). The majority of the 12 cases of epididymitis (83.3%) were in the <25 years age group and were of European ethnicity (66.7%) (Table 26). The pattern was similar for PID with the majority of the 93 cases in the < 25 years age group (68.8%) and of European (59.8%), followed by Māori (29.0%), ethnicity (Table 27).

Table 26. Epididymitis cases reported in males by age group, ethnicity and clinic type, 2015

Ethnicity	SHC			FPC		
	<25 years	25+ years	Total	<25 years	25+ years	Total
European	5	2	7	1	0	1
Māori	3	0	3	1	0	1
Pacific peoples	0	0	0	0	0	0
Other	0	0	0	0	0	0
Unknown	0	0	0	0	0	0
Total	**8**	**2**	**10**	**2**	**0**	**2**

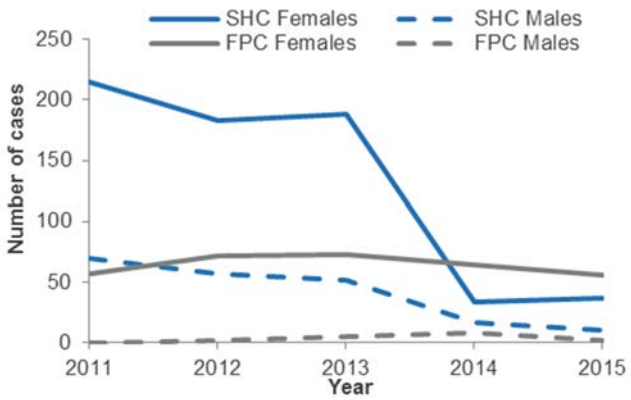
Table 27. PID cases reported in females by age group, ethnicity and clinic type, 2015

Ethnicity	SHC			FPC		
	<25 years	25+ years	Total	<25 years	25+ years	Total
European	11	5	16	24	15	39
Māori	14	3	17	7	3	10
Pacific peoples	0	0	0	4	1	5
Other	2	2	4	1	0	1
Unknown	0	0	0	1	0	1
Total	**27**	**10**	**37**	**37**	**19**	**56**

Trends in complicated infections

Figure 16 presents the number of epididymitis cases in males and PID cases in females reported by SHCs and FPCs from 2011 to 2015. Notably, the numbers of complicated infections seen in SHCs have decreased by more than three quarters in both males and females (70 to 10 cases and 215 to 37 cases, respectively). There has been little change in the numbers of complicated infections seen in FPCs.

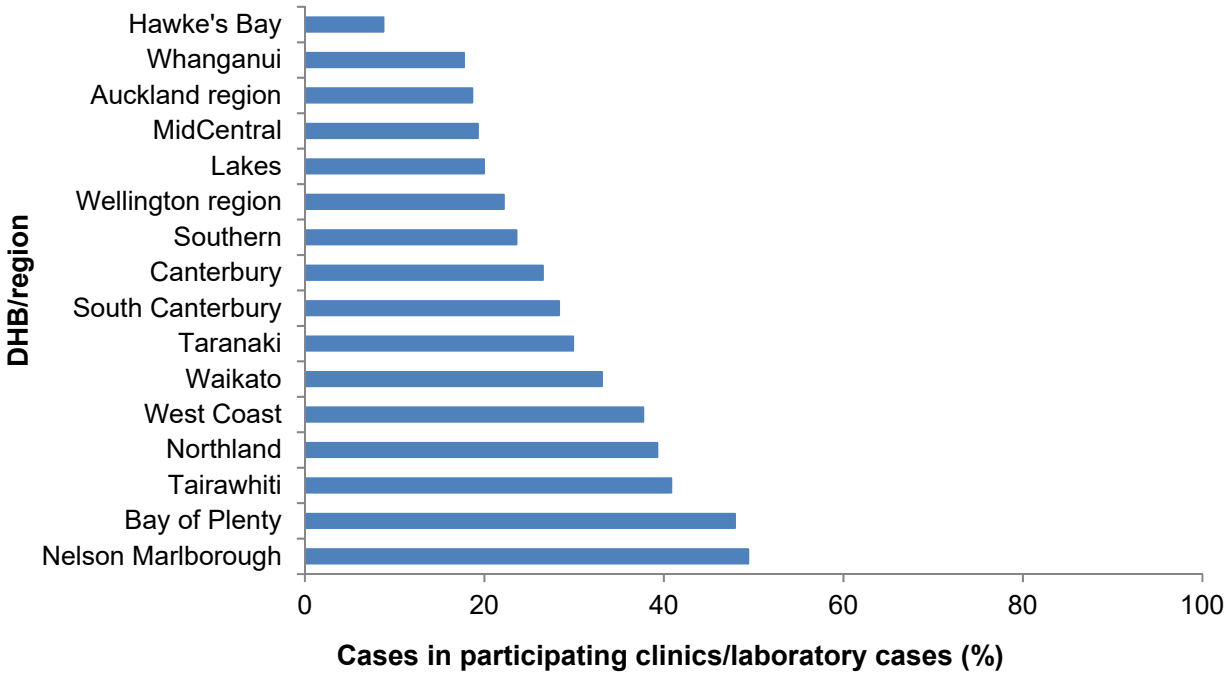
Figure 16. Numbers of epididymitis cases in males and PID cases in females by clinic type, 2011–2015



COMPARISON OF LABORATORY AND CLINIC SURVEILLANCE

The number of cases seen in participating clinics (all SHCs and FPCs) as a proportion of laboratory cases are presented in Figure 17. The proportion of cases diagnosed in settings other than a participating clinic ranged from 51% to 91% with an average of 71% nationally. Chlamydia cases that were not reported from a SHC or FPC are likely to have been diagnosed in a primary care facility.

Figure 17. Cases of chlamydia seen in participating clinics* as a proportion (%) of all positive laboratory tests by DHB, 2015



- All public sexual health and family planning clinics in New Zealand participate in clinic-based STI surveillance

GONORRHOEA

Infections due to *Neisseria gonorrhoeae* can cause dysuria and urethral discharge in males and vaginal discharge in females. Asymptomatic infection can occur in up to 5% of males and 50% of females [15]. Untreated gonococcal infection may be associated with long-term serious sequelae, including PID in females, epididymo-orchitis in males and severe conjunctivitis in neonates [14]

KEY FINDINGS: 2015

- The national rate of gonorrhoea was 75 cases per 100,000 population, a significant increase from the 2014 estimated rate (70 per 100,000)
- Between 2011 and 2015, test positivity increased slightly from 0.8% to 1.0% during which time the number of specimens tested increased by 27.8%, with 80% of specimens from females
- Although the highest rate of gonorrhoea was reported in Tairawhiti DHB (229 cases per 100,000 population, this was a significant decrease from the 2014 rate (316 per 100,000)
- 50.5% of laboratory-confirmed cases were diagnosed in the Auckland region (1733 cases); the Auckland rate of 109 per 100,000 was a significant increase from 2014 (82 per 100,000)
- The national rate for males was higher than for females (86 and 63 per 100,000 respectively) with male rates higher than the female rate in all regions with large urban centres
- 69% (2348) of cases diagnosed were aged 15–29 years and four cases were aged <1 year
- In those aged 15–29 years the highest estimated gonorrhoea rates were predominantly reported in the Māori and Pacific peoples ethnic groups
- Estimated national rates for males were higher than female across all ethnicities apart from Māori, and this pattern was also seen in the high risk age groups apart from Pacific peoples and European (15–19 years) ethnicities where female rates were higher than male
- Annual population testing rates across all age groups were almost four times higher for females compared with males with the highest testing rates in the 15–34 years age group
- Annual testing coverage rates in the highest-risk age groups suggest that <10% of males and 22–36% of females had at least one annual test.
- An increasing number of gonorrhoea cases were diagnosed via anorectal and throat specimens in males (>30% of positive tests), and in throat specimens in females
- Eight *N. gonorrhoeae* isolates with decreased susceptibility to ceftriaxone were identified in 2015: Waikato DHB (4 cases), Wellington region (3 cases) and Auckland region (1 case)
- 62% of cases were diagnosed outside of a sexual health or family planning clinic, most likely in primary care settings

COMMENTARY

There was a significant increase in the national gonorrhoea rate in 2015, largely driven by the increased rate in the Auckland region where the rate is higher for males compared with females. It is unclear whether this reflects a true increase in incidence or is due to increased testing and screening of infected people, particularly males who are now able to be tested on a urine sample rather than a urethral swab. As in recent years a higher rate in males was also reported in other regions with large urban centres (Wellington region, Canterbury and Southern DHBs), all regions where there has been a notable increase in syphilis cases numbers among MSM. There is a difference across ethnic groups with a higher gonorrhoea rate in Maori females, all age groups, and in younger females of Pacific peoples ethnicity, compared with males. These differing patterns among ethnicities and geographic settings suggest that a range of strategies are needed for control of gonorrhoea.

LABORATORY SURVEILLANCE OF GONORRHOEA

NATIONAL AND DHB ANALYSIS

2015 analysis

In 2015 there were 3424 laboratory-confirmed cases of gonorrhoea. The national gonorrhoea rate was 75 per 100,000 population, a significant increase from the 2014 estimated rate of 70 per 100,000 population. Case numbers and population rates for each DHB for the past two years are shown in Table 28.

Table 28. Number of gonorrhoea laboratory-confirmed cases and gonorrhoea rates by DHB, 2014–2015

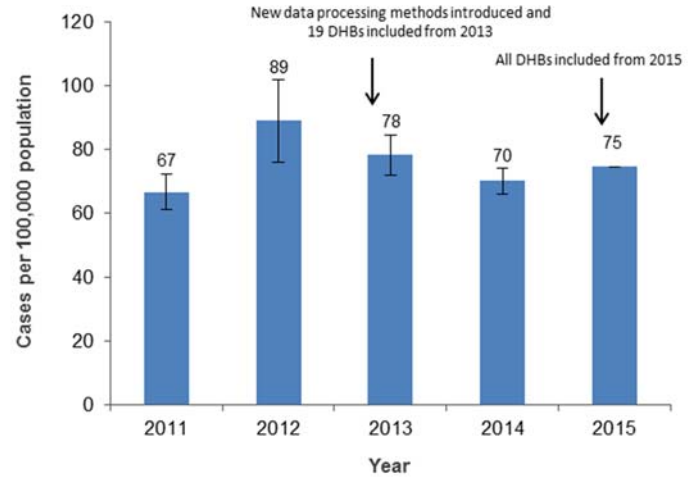
DHB	Number of laboratory-confirmed cases		Rate per 100,000 population		Rate change[d,e]
	2014	2015	2014	2015	
Northland[a]	-	124	-	74	-
Auckland region[b]	1271	1733	82	109	↑
Waikato	372	362	97	93	↓
Lakes	132	163	128	155	↑
Bay of Plenty	124	133	57	60	↑
Tairawhiti	149	108	316	229	↓
Taranaki	27	10	23	9	↓
Hawke's Bay	194	149	122	93	↓
Whanganui	36	31	58	50	↓
MidCentral	132	75	78	44	↓
Wellington region[c]	225	238	51	53	↑
Wairarapa	10	4	23	-	-
Nelson Marlborough	47	39	33	27	↓
West Coast	2	3	-	-	-
Canterbury	224	161	44	31	↓
South Canterbury	15	6	26	10	↓
Southern	80	85	26	27	↑
Total	**3040**	**3424**	**70**	**75**	↑

[a] Data incomplete in 2014.
[b] Waitemata, Auckland and Counties Manukau DHBs.
[c] Hutt Valley and Capital & Coast DHBs.
[d] ↓ = significant decrease, ↑ = significant increase, NC = no change, ↓ = not significant decrease, ↑ = not significant increase.
[e] Fisher's exact tests were used to determine statistical significance. Results are considered statistically significant when the *P* value is less than or equal to 0.05.

Trends in laboratory diagnoses

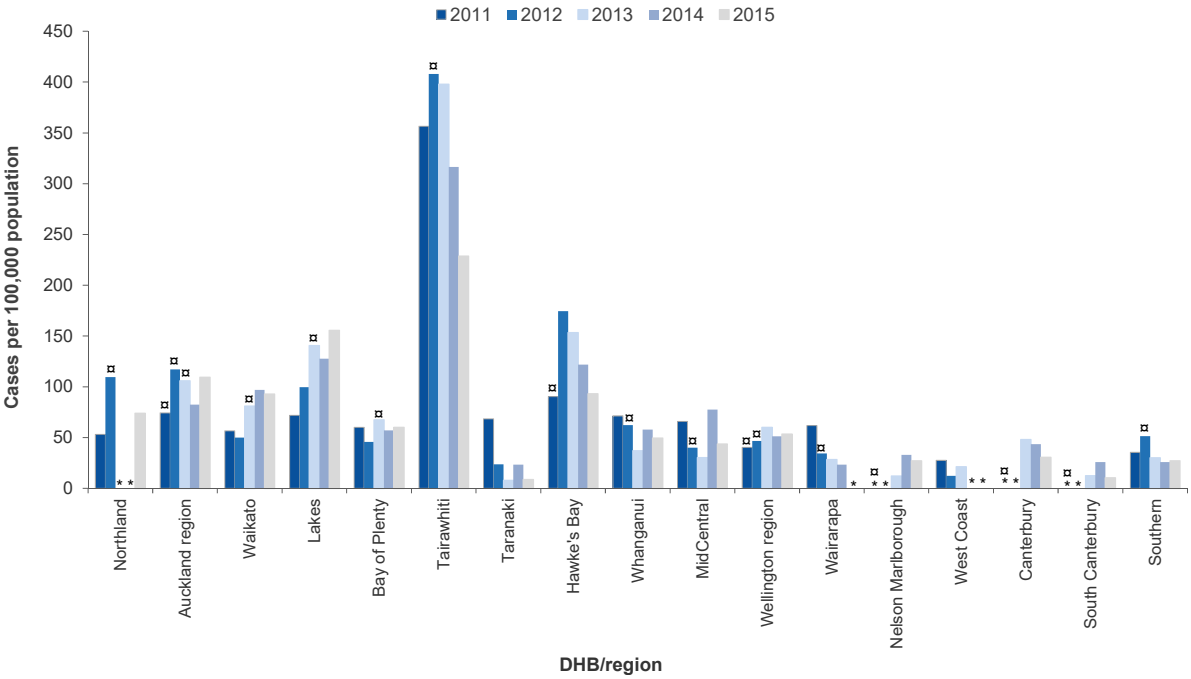
From 2011 to 2015, there was a small but significant increase in the national estimated gonorrhoea rate (Figure 18). Introduction of nucleic acid amplification (NAAT) testing for gonorrhoea may explain the observed increase (see Interpreting the results). The gonorrhoea rate varied among DHBs and across years (Figure 19).

Figure 18. Estimated national gonorrhoea rate, 2011–2015



Note: Estimated rates with 95% CIs were calculated for 2011 and 2012 based on data from 17 DHBs and for 2013 and 2014 on data from 19 DHBs. All DHBs were included in 2015. New data processing methods allow for exclusion of repeat tests within a defined period (see Data collection). Introduction of NAAT testing began in 2011, with most labs using this method by 2013.

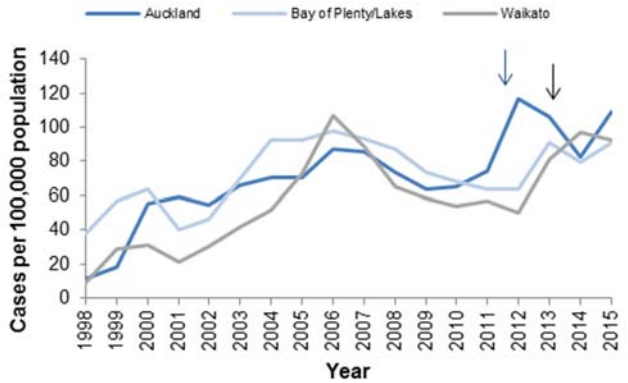
Figure 19. Gonorrhoea rates by DHB, 2011–2015



Note: Auckland region includes Waitemata, Auckland and Counties Manukau DHBs. Wellington region includes Hutt Valley and Capital & Coast DHBs.
* Data incomplete or rate not calculated as fewer than five cases. ¤ Introduction of NAAT testing (see Surveillance methods).

Longer term trend analysis based on a limited number of DHBs show that since 1998 rates have generally been increasing (Figure 20).

Figure 20. Gonorrhoea rates in selected regions, 1998–2015



Note: Auckland region includes Waitemata, Auckland and Counties Manukau DHBs. New data processing methods introduced in 2013.
↓ NAAT testing was introduced in the Auckland region in 2011 (LabPlus) and 2012 (LabTests).
↓ NAAT testing was introduced in the Bay of Plenty/Lakes region and the Waikato region (Pathlab) in 2013.

AGE AND SEX DISTRIBUTION OF LABORATORY-CONFIRMED CASES

2015 analysis

Age and sex information was recorded for 99.2% of laboratory-confirmed gonorrhoea cases. The national rate for males (86 per 100,000 population, 1931 cases) was higher than the national rate for females (63 per 100,000 population, 1471 cases). Both of these rates were higher than the respective 2014 rates for males (74 per 100,000) and females (60 per 100,000).

For both males and females high rates of gonorrhoea were reported in Tairawhiti and Lakes DHBs, and for males in the Auckland region (Table 29).

Table 29. Number of laboratory-confirmed gonorrhoea cases and gonorrhoea rates by DHB and sex, 2015

DHB	Number of laboratory-confirmed cases				Rate per 100,000 population[c]		
	Male	Female	Unknown	Total	Male	Female	Total
Northland	79	45	0	124	96	52	74
Auckland region[a]	1083	649	1	1733	139	80	109
Waikato	155	206	1	362	81	104	93
Lakes	56	107	0	163	109	200	155
Bay of Plenty	53	67	13	133	49	59	60
Tairawhiti	36	72	0	108	157	297	229
Taranaki	5	5	0	10	9	9	9
Hawke's Bay	54	94	1	149	70	113	93
Whanganui	14	17	0	31	46	53	50
MidCentral	38	37	0	75	45	42	44
Wellington region[b]	184	54	0	238	85	24	53
Wairarapa	2	2	0	4	-	-	-
Nelson Marlborough	18	21	0	39	25	28	27
West Coast	2	1	0	3	-	-	-
Canterbury	102	55	4	161	39	21	31
South Canterbury	4	2	0	6	-	-	10
Southern	46	37	2	85	30	23	27
Total	**1931**	**1471**	**22**	**3424**	**86**	**63**	**75**

[a] Waitemata, Auckland and Counties Manukau DHBs. [b] Hutt Valley and Capital & Coast DHBs.
[c] Rates have not been calculated where there were fewer than five cases in any category.

Table 30 presents the number of laboratory-confirmed gonorrhoea cases, and gonorrhoea population rates by DHB and age group for 2015. Sixty-nine percent (2348) of positive cases were aged between 15 and 29 years.

Table 30. Number of laboratory-confirmed gonorrhoea cases and gonorrhoea rates by DHB and age group, 2015

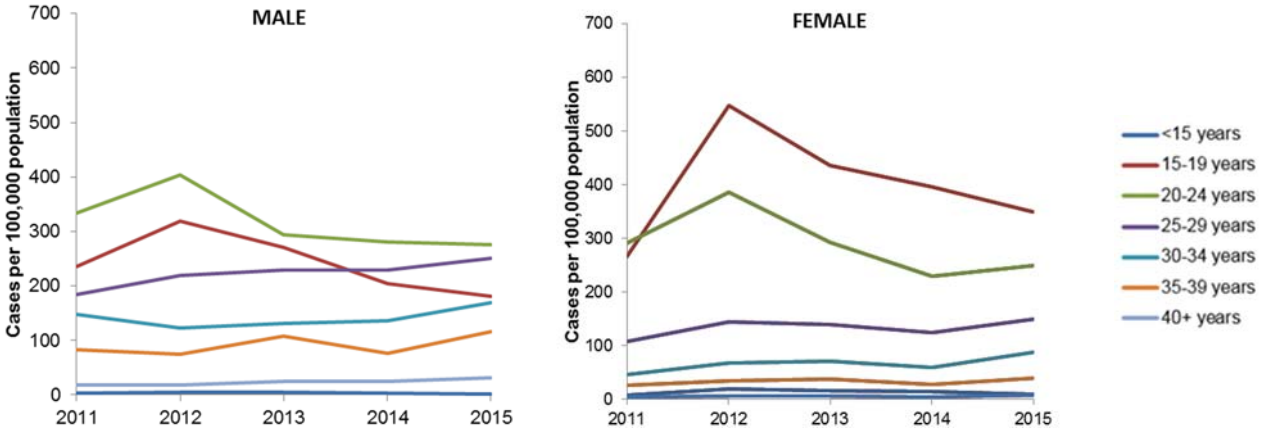
DHB	Age group (years)[c]																			
	0–4		5–9		10–14		15–19		20–24		25–29		30–34		35–39		40+		Unknown		Total	
	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000	Cases	Rate per 100,000
Northland	1	-	0	-	1	-	55	499	34	381	16	201	6	79	5	63	6	7	0	-	124	74
Auckland region[a]	2	-	0	-	13	13	321	288	429	326	337	262	224	194	135	132	272	40	0	-	1733	109
Waikato	0	-	0	-	7	27	124	441	97	339	64	257	36	159	12	55	22	12	0	-	362	93
Lakes	0	-	0	-	11	144	73	993	39	611	16	256	16	283	2	-	6	12	0	-	163	155
Bay of Plenty	0	-	0	-	1	-	25	173	34	281	21	188	20	183	7	61	11	10	14	-	133	60
Tairawhiti	0	-	0	-	6	155	49	1454	27	914	13	482	5	205	5	195	3	-	0	-	108	229
Taranaki	0	-	0	-	0	-	0	-	1	-	3	-	0	-	1	-	0	-	5	-	10	9
Hawke's Bay	0	-	0	-	2	-	59	529	41	458	16	201	15	196	4	-	12	15	0	-	149	93
Whanganui	0	-	0	-	0	-	4	-	7	195	7	210	4	-	1	-	4	-	4	-	31	50
MidCentral	0	-	0	-	2	-	15	117	24	184	11	103	5	534	5	56	8	10	5	-	75	44
Wellington region[b]	0	-	0	-	0	-	34	115	70	189	60	186	18	59	17	57	37	18	2	-	238	53
Wairarapa	0	-	0	-	0	-	2	-	1	-	0	-	0	-	0	-	1	-	0	-	4	-
Nelson Marlborough	1	-	0	-	0	-	17	197	8	119	5	73	2	-	4	-	2	-	0	-	39	27
West Coast	0	-	0	-	0	-	0	-	2	-	1	-	0	-	0	-	0	-	0	-	3	-
Canterbury	1	-	0	-	1	-	33	91	42	108	35	95	10	30	11	35	24	10	4	-	161	31
South Canterbury	0	-	0	-	0	-	1	-	3	-	1	-	0	-	0	-	1	-	0	-	6	10
Southern	0	-	0	-	2	-	18	80	33	128	20	103	4	-	2	-	4	-	2	-	85	27
Total	**5[d]**	**-**	**0**	**-**	**46**	**16**	**830**	**262**	**892**	**264**	**626**	**201**	**365**	**127**	**211**	**77**	**413**	**19**	**36**	**-**	**3424**	**75**

[a] Waitemata, Auckland and Counties Manukau DHBs.
[b] Hutt Valley and Capital & Coast DHBs.
[c] Rates have not been calculated where there were fewer than five cases in any category.
[d] Includes four cases under one year of age.

Trends in age and sex distribution of gonorrhoea cases

Between 2011 and 2015 the trend for gonorrhoea rates varied by age group and sex (Figure 21).

Figure 21. Gonorrhoea rates by sex and age group, 2011–2015



Note: Estimated rates were calculated for 2011 and 2012 based on data from 17 DHBs, and for 2013 and 2014 on data from 19 DHBs. All DHBs were included in 2015. New data processing methods introduced in 2013 allow for exclusion of repeat tests within a defined period (see Data collection).

ETHNICITY DISTRIBUTION OF LABORATORY-CONFIRMED CASES

2015 analysis

Ethnicity information was recorded for 83.7% of gonorrhoea cases based on data from 19/20 DHBs. The highest estimated national rates were seen in the MELAA ethnic group for males (191 per 100,000, 45 cases) and the Māori ethnic group for females (260 per 100,000, 732 cases) (Table 31). The four laboratory-confirmed gonorrhoea cases reported in the less than one year age group were in the Māori (2 cases), European and Other and Pacific peoples (1 case each) ethnic groups and specimen sites were reported as eye (3 cases) and ear (1 case).

Table 31. Number of laboratory-confirmed gonorrhoea cases and gonorrhoea rates by ethnicity and sex, 2015

Ethnicity	Number of laboratory-confirmed cases[a]				Rate per 100,000 population[a]		
	Male	Female	Unknown	Total	Male	Female	Total[b]
Māori	407	732	1	1140	152	260	208
Pacific peoples	249	202	1	452	177	142	160
Asian	119	40	0	159	52	17	34
MELAA	45	7	0	52	191	32	114
European or Other	705	349	0	1054	49	24	36
Unknown	367	170	20	557	-	-	-
Total	**1892**	**1500**	**22**	**3414**	**86**	**66**	**76**

[a] All counts and rates exclude Taranaki DHB.
[b] Includes unknown sex.

Table 32 presents the number of gonorrhoea cases, and gonorrhoea rates by ethnic group and sex for the age groups with the highest gonorrhoea rates for 2015 (15–19 years, 20–24 years and 25–29 years). Within these age groups the highest rates predominantly occured in the Māori and Pacific peoples ethnic groups for both sexes, and in the MELAA ethnic group for males aged 25–29 years. Rates amongst females reporting Māori ethnicity were consistently higher than those of their male counterparts, and in each of these higher risk age groups the Māori female rate was more than three times greater than the estimated national rate for that age group and sex.

Table 32. Number of laboratory-confirmed gonorrhoea cases and gonorrhoea rates by ethnicity, age group and sex, 2015

Ethnicity	Age group (years)[a,b]																	
	15–19						20–24						25–29					
	Cases			Rate per 100,000 population			Cases			Rate per 100,000 population			Cases			Rate per 100,000 population		
	Male	Female	Total[c]	Male	Female	Total[c]	Male	Female	Total[c]	Male	Female	Total[c]	Male	Female	Total[c]	Male	Female	Total[c]
Māori	122	302	424	453	1190	810	121	194	315	510	810	661	66	99	165	371	489	434
Pacific peoples	70	72	142	486	517	502	64	62	127	474	462	472	48	32	80	441	290	365
Asian	8	1	9	45	-	26	20	11	31	75	50	64	34	8	42	123	29	76
MELAA	1	1	2	-	-	-	9	2	11	359	-	244	15	1	16	533	-	298
European or Other	58	85	143	64	100	81	155	99	254	165	111	139	139	69	208	168	83	125
Unknown	36	74	110	-	-	-	113	39	153	-	-	-	88	24	112	-	-	-
Total	**295**	**535**	**830**	**185**	**358**	**268**	**482**	**407**	**891**	**280**	**254**	**268**	**390**	**233**	**623**	**256**	**152**	**204**

[a] Rates have not been calculated where there were fewer than five cases in any category.
[b] All counts and rates exclude Taranaki DHB.
[c] Includes unknown sex.

TEST POSITIVITY AND POPULATION TESTING RATES

2015 analysis by DHB, age group and sex

The estimated population testing rate was 103 gonorrhoea tests per 1000 population, and 1.0% of all tests were positive. However, specimen counts did not exclude repeat samples from the same individual.

Although the highest population testing rates were in the Auckland region, Lakes and Canterbury DHBs, Tairawhiti DHB had the highest test positivity (percentage of specimens that tested positive)(Table 33).

Table 33. Number of specimens tested for gonorrhoea, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory-confirmed cases by DHB, 2015

DHB	Total specimens	Tests per 1000 population	Test positivity (%)[a]	Number of laboratory-confirmed cases[b]
Northland	17,447	104	0.8	124
Auckland region[c]	184,476	116	1.5	1733
Waikato	39,513	101	1.2	362
Lakes	11,915	114	1.5	163
Bay of Plenty	18,566	84	0.9	133
Tairawhiti	4265	90	2.8	108
Taranaki[d]	10,653	92	0.2	10
Hawke's Bay	14,725	92	1.3	149
Whanganui	4425	71	0.8	31
MidCentral	13,245	77	0.8	75
Wellington region[e]	45,155	101	0.7	238
Wairarapa	2522	58	0.2	4
Nelson Marlborough[f]	9415	65	0.5	39
West Coast	2089	64	0.1	3
Canterbury	59,302	113	0.4	161
South Canterbury	4418	75	0.2	6
Southern	30,755	98	0.4	85
Total	**472,886**	**103**	**1.0**	**3424**

[a] Calculated using the number of positive specimens (includes repeat tests).
[b] Excludes repeat tests.
[c] Waitemata, Auckland and Counties Manukau DHBs.
[d] All testing by culture.
[e] Hutt Valley and Capital & Coast DHBs.
[f] Two tests for most patients (culture and NAAT).

The estimated national testing rate for males was 43 tests per 1000 population, whereas for females was 162 per 1000. The highest population testing rates were reported in the 20–24 years age group for both males and females (Table 34). Males had higher test positivity across all age groups compared to females apart from the 0–4 years age group. For both males and females test positivity was highest in the Unknown age group (5.9% and 2.3%, respectively).

Table 34. Number of specimens tested for gonorrhoea, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory–confirmed cases, by age group and sex, 2015

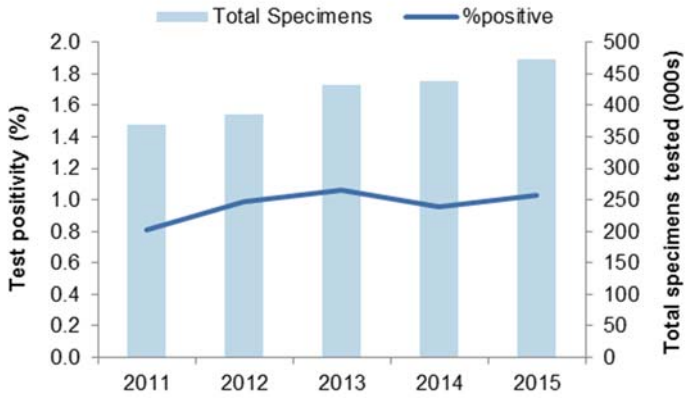
Age group (years)	Total specimens[a]			Tests per 1000 population[a]			Test positivity (%)[a,b]			Number of laboratory–confirmed cases[a,c]		
	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]
0–4	896	977	1876	6	7	6	0.1	0.9	0.5	1	4	5
5–9	73	254	328	0	2	1	0.0	0.0	0.0	0	0	0
10–14	364	3096	3466	2	22	12	2.7	1.5	1.6	7	39	46
15–19	10,668	54,976	65,705	67	367	213	4.1	1.2	1.6	295	535	830
20–24	23,222	91,620	114,963	135	573	346	3.2	0.6	1.1	482	407	891
25–29	18,048	66,002	84,099	119	431	275	3.5	0.4	1.1	390	233	623
30–34	11,491	47,985	59,522	85	330	212	3.3	0.3	0.9	234	130	365
35–39	7676	33,956	41,653	60	243	156	3.1	0.2	0.7	152	58	210
40+	21,071	69,101	90,214	21	63	43	2.5	0.2	0.7	322	91	413
Unknown	153	131	407	-	-	-	5.9	2.3	8.8	9	3	31
Total	**93,662**	**368,098**	**462,233**	**43**	**162**	**103**	**3.2**	**0.5**	**1.0**	**1892**	**1500**	**3414**

[a] All counts, rates and percentages exclude Taranaki DHB.
[b] Calculated using the number of positive specimens (includes repeat tests).
[c] Excludes repeat tests.
[d] Includes unknown sex.

Trends in test positivity

Between 2011 and 2015 test positivity increased slightly from 0.8% to 1.0% (Figure 22). During the same time period the number of specimens tested increased. The test type was recorded for 98.2% of specimens tested in 2015, of which 88.7% were NAATs and the remainder were cultures. There has been an increasing trend in the proportion of NAAT tests since this information was first available in 2013 increasing from 78% NAAT tests in 2013 to 87% in 2014.

Figure 22. Test positivity and total specimens tested for gonorrhoea, 2011–2015



Note: based on data from 17 DHBs in 2011 and 2012, 19 DHBs in 2013 and 2014, and all DHBs in 2015.

Ethnicity analysis of test positivity and population testing rates

For both males and females the highest population testing rate was reported in the MELAA ethnic group (Table 35). Test positivity was highest for males in the Pacific peoples ethnic group (7.5%) and for females in the Māori ethnic group (1.2%).

Table 35. Number of specimens tested for gonorrhoea, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory-confirmed cases by ethnicity and sex, 2015

Ethnicity	Total specimens[a]			Tests per 1000 population[a]			Test positivity (%)[a,b]			Number of laboratory-confirmed cases[a,c]		
	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]
Māori	11,506	73,765	85,296	43	262	155	5.1	1.2	1.7	407	732	1140
Pacific peoples	5300	31,166	36,475	38	218	129	7.5	0.9	1.8	249	202	452
Asian	7163	39,118	46,295	31	164	99	2.7	0.1	0.5	119	40	159
MELAA	2128	5963	8094	90	271	177	3.4	0.1	1.0	45	7	52
European or Other	50,999	193,278	244,348	36	130	84	2.3	0.2	0.7	705	349	1054
Unknown	16,566	24,808	41,725	-	-	-	3.2	0.8	1.8	367	170	557
Total	**93,662**	**368,098**	**462,233**	**43**	**162**	**103**	**3.2**	**0.5**	**1.0**	**1892**	**1500**	**3414**

[a] All counts, rates and percentages exclude Taranaki DHB. [b] Calculated using the number of positive specimens (includes repeat tests).
[c] Excludes repeat tests. [d] Includes unknown sex.

When further analysed by the highest risk age groups (15–19 years, 20–24 years and 25–29 years) a different pattern of testing rates and test positivity was seen (Table 36 to Table 38). The highest population testing rates occurred in the Māori ethnic group for females and in the Māori or MELAA ethnic group for males. In each of these age groups test positivity was highest in the Pacific peoples ethnic group for males and in the Pacific peoples or Māori ethnic group for females.

Table 36. Number of specimens tested for gonorrhoea, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory-confirmed cases by ethnicity and sex in the 15–19 years age group, 2015

Ethnicity	Total specimens[a]			Tests per 1000 population[a]			Test positivity (%)[a,b]			Number of laboratory-confirmed cases[a,c]		
	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]
Māori	2486	15,848	18,342	92	624	351	6.4	2.2	2.8	122	302	424
Pacific peoples	951	3709	4660	66	266	165	10.8	2.7	4.3	70	72	142
Asian	376	1490	1868	21	92	55	3.2	0.1	0.7	8	1	9
MELAA	115	361	476	64	225	140	0.9	0.3	0.4	1	1	2
European or Other	5307	28,482	33,806	59	335	192	2.1	0.4	0.6	58	85	143
Unknown	1433	5086	6553	-	-	-	3.6	1.7	2.1	36	74	110
Total	**10,668**	**54,976**	**65,705**	**67**	**367**	**213**	**4.1**	**1.2**	**1.6**	**295**	**535**	**830**

[a] All counts, rates and percentages exclude Taranaki DHB. [b] Calculated using the number of positive specimens (includes repeat tests).
[c] Excludes repeat tests. [d] Includes unknown sex.

Table 37. Number of specimens tested for gonorrhoea, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory-confirmed cases by ethnicity and sex in the 20–24 years age group, 2015

Ethnicity	Total specimens[a]			Tests per 1000 population[a]			Test positivity (%)[a,b]			Number of laboratory-confirmed cases[a,c]		
	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]
Māori	3046	19,056	22,112	128	796	464	5.7	1.2	1.8	121	194	315
Pacific peoples	1448	7766	9219	107	579	343	7.0	1.4	2.0	64	62	127
Asian	1477	5539	7019	56	254	145	2.3	0.3	0.7	20	11	31
MELAA	369	1052	1422	147	526	316	3.5	0.2	1.1	9	2	11
European or Other	12,815	51,374	64,215	136	577	351	2.0	0.2	0.6	155	99	254
Unknown	4067	6833	10,976	-	-	-	4.0	0.8	2.0	113	39	153
Total	**23,222**	**91,620**	**114,963**	**135**	**573**	**346**	**3.2**	**0.6**	**1.1**	**482**	**407**	**891**

[a] All counts, rates and percentages exclude Taranaki DHB. [b] Calculated using the number of positive specimens (includes repeat tests).
[c] Excludes repeat tests. [d] Includes unknown sex.

Table 38. Number of specimens tested for gonorrhoea, number of tests per 1000 population, percentage of specimens tested that were positive and number of laboratory-confirmed cases by ethnicity and sex in the 25–29 years age group, 2015

Ethnicity	Total specimens[a]			Tests per 1000 population[a]			Test positivity (%)[a,c]			Number of laboratory-confirmed cases[a,c]		
	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]	Male	Female	Total[d]
Māori	2005	13,268	15,273	113	655	401	5.1	1.0	1.5	66	99	165
Pacific peoples	1020	6241	7262	94	566	331	7.9	0.7	1.7	48	32	80
Asian	1807	8362	10,172	65	305	185	3.0	0.1	0.6	34	8	42
MELAA	549	1229	1778	195	480	331	4.7	0.1	1.5	15	1	16
European or Other	9296	32,127	41,435	112	387	250	2.6	0.3	0.8	139	69	208
Unknown	3371	4775	8179	-	-	-	3.5	0.5	1.8	88	24	112
Total	**18,048**	**66,002**	**84,099**	**119**	**431**	**275**	**3.5**	**0.4**	**1.1**	**390**	**233**	**623**

[a] All counts, rates and percentages exclude Taranaki DHB. [b] Calculated using the number of positive specimens (includes repeat tests).
[c] Excludes repeat tests. [d] Includes unknown sex.

Analysis of testing coverage rates (percentage of people tested annually)

Coverage rates were lower than population testing rates for both males and females across the three highest risk age groups. Annual coverage rates for these three high risk age groups were between 4.7 and 8.9% for males and between 22.1 and 36.2% for females (Table 39).

The percentage decrease between population testing rates and coverage rates varied by ethnic group. For males, the Asian and MELAA ethnic groups showed the greatest decrease, especially in the 25–29 years age group (around 50%). For females, the Māori and Pacific peoples ethnic groups showed the greatest decrease across the age groups, range from 39% to 46%. This suggests many cases have been retested at least once.

Table 39. Percentage of gonorrhoea specimens tested that were positive, number of tests per 1000 population, and number of people tested per 1000 population by ethnicity, age group and sex, 2015

Ethnicity	Age group (years)[a]																	
	15–19						20–24						25–29					
	Test positivity (%)[b]		Tests per 1000 population		Coverage (%)[c]		Test positivity (%)[b]		Tests per 1000 population		Coverage (%)[c]		Test positivity (%)[b]		Tests per 1000 population		Coverage (%)[c]	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Māori	6.4	2.2	92	624	6.8	33.5	5.7	1.2	128	796	8.7	45.5	5.1	1.0	113	655	7.5	39.3
Pacific peoples	10.8	2.7	66	266	4.3	15.2	7.0	1.1	107	579	7.1	33.4	7.9	0.7	94	566	6.1	34.5
Asian	3.2	0.1	21	92	1.2	6.3	2.3	0.3	56	254	3.0	17.5	3.0	0.1	65	305	3.4	21.9
MELAA	0.9	0.3	64	225	4.7	14.8	3.5	0.2	147	526	8.5	33.7	4.7	0.1	195	480	9.7	31.8
European or Other	2.1	0.4	59	335	4.1	20.7	2.0	0.2	136	577	8.9	37.1	2.6	0.3	112	387	7.0	26.7
Unknown	3.5	1.7	-	-	-	-	4.0	0.8	-	-	-	-	3.5	0.5	-	-	-	-
Total	**4.1**	**1.2**	**67**	**367**	**4.7**	**22.1**	**3.2**	**0.6**	**135**	**573**	**8.9**	**36.2**	**3.5**	**0.4**	**119**	**431**	**7.3**	**29.0**

[a] All percentages and rates exclude Taranaki DHB.
[b] Calculated using the number of positive specimens (includes repeat tests).
[c] Unique tests based on NHI and patient ID numbers.

SPECIMEN SITE

2015 analysis

The site from which a specimen was taken was recorded for 97.8% (4759/4864) of positive specimens. The most common site recorded for males was urine (38.5%) and for females was the vagina (40.4%) (Table 40). A total of 8 positive specimens were from the eye, of which 87.5% were from the 3 reported cases aged less than one year.

Table 40. Percentage of positive gonorrhoea tests by specimen site and sex, 2015

Specimen site	Sex[a]	
	Male	Female
Urethral	22.5	0.5
Vaginal	-	40.4
Cervix	-	33.9
Penile	3.8	-
Anorectal	13.5	0.8
Eye	0.0	0.3
Urine	38.5	7.6
Urogenital[b]	1.4	7.9
Throat	17.7	1.8
Other	1.4	4.0
Unknown	1.1	2.8

[a] Excludes specimens with unknown sex .[b] Pooled specimens from more than one site.

Trends in specimen site

Figure 23 and Figure 24 present the percentage of positive gonorrhoea tests by specimen site for males and females from 2011 to 2015. The trend of increasing urine/decreasing urethral sites in males and increasing vaginal/decreasing cervical sites in females has continued, but this is expected due to changes in sampling techniques. In contrast, the observed increase in the proportion of positive tests from the anorectal site and throat in males suggests possible changes in risk behaviours.

Figure 23. Specimen site, as a percentage of all positive gonorrhoea tests in males, 2011–2015

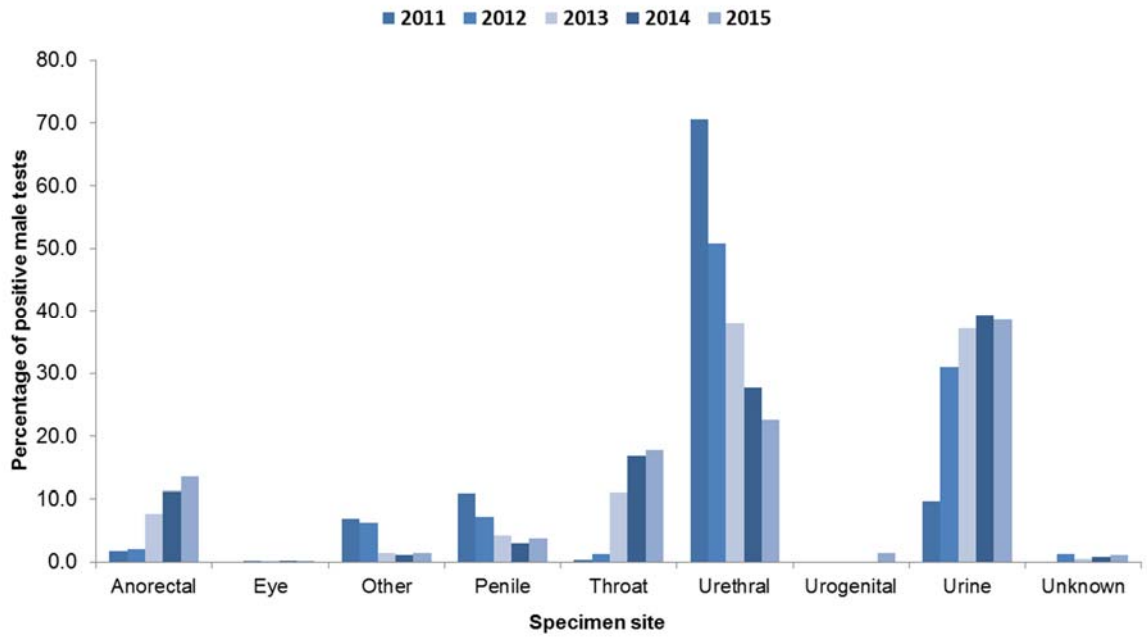
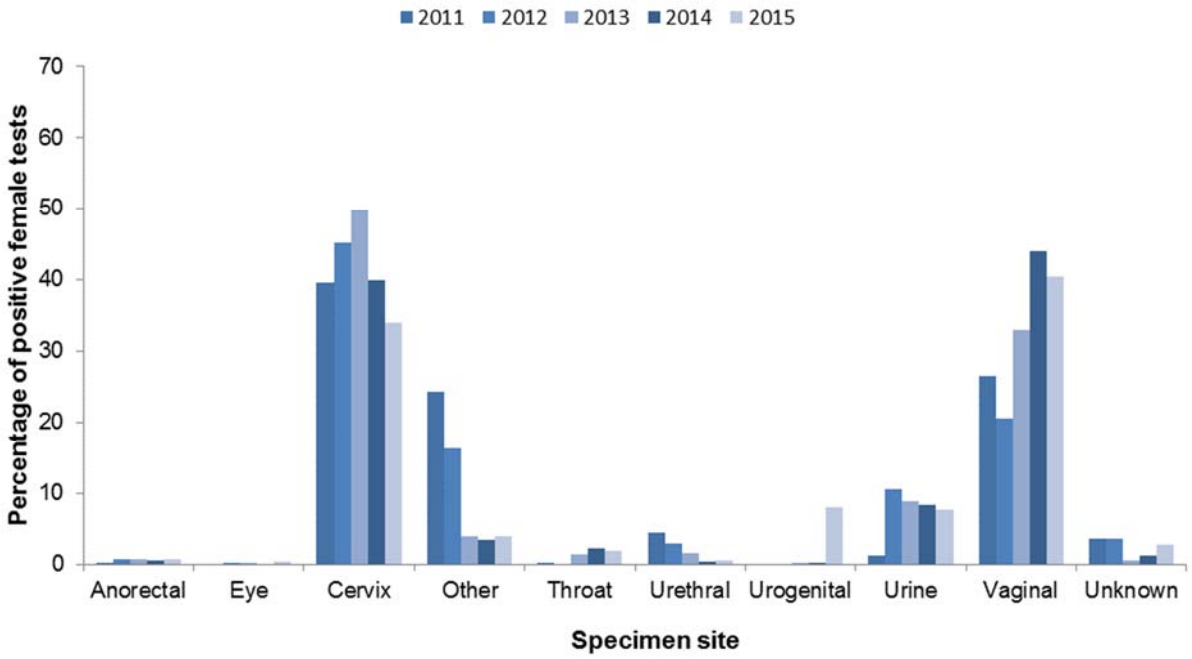


Figure 24. Specimen site, as a percentage of all positive gonorrhoea tests in females, 2011–2015



ANTIBIOTIC RESISTANCE SURVEILLANCE

In 2015, the prevalence of resistance to penicillin and ciprofloxacin among *N. gonorrhoeae* isolates was 10.6% and 31.0%, respectively. Rates of resistance since 2000 are presented in Figure 25.

The number of isolates tested for penicillin resistance decreased from 2014 to 2015 (from 208 to 198 isolates). However, during the same period the number of isolates tested for ciprofloxacin resistance increased (from 667 to 944 isolates) (Table 41).

In 2015, three DHBs reporteded they had tested at least 30 isolates for penicillin resistance and the prevalence of resistance in these DHBs was 10.5 % (Hawke's Bay), 11.6% (Waikato) and 14.3% (Canterbury). For ciprofloxacin resistance, five DHBs or regions reported testing at least 30 isolates and the prevalence of resistance in these ranged from 14.0% in Hawke's Bay to 52.9% in Waikato. The Auckland region reported the highest number of isolates tested (581) for ciprofloxacin resistance and a prevalence of 26.3% resistance was reported (Table 41).

Ceftriaxone is now considered the first-line treatment for gonorrhoea. While no ceftriaxone resistance (minimum inhibitory concentration (MIC) >0.25 mg/L) has been detected among *N. gonorrhoeae* in New Zealand to date, in 2015 isolates with decreased susceptibility to ceftriaxone (MICs typically 0.06 mg/L) were identified in Waikato DHB (4 cases), Wellington region (3 cases) and the Auckland region (1 case). Isolates with decreased susceptibility have previously been identified in the Auckland and Wellington regions, and in Waikato and Canterbury DHBs.

Figure 25. Prevalence of penicillin and ciprofloxacin resistance among *N. gonorrhoeae* isolates, 2000–2015

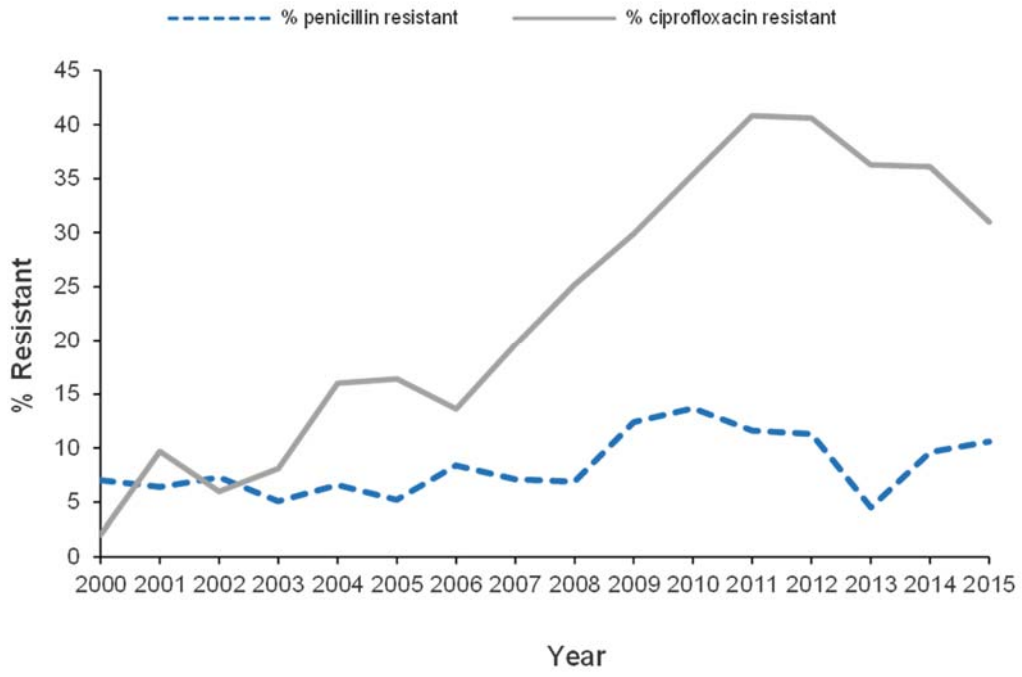


Table 41. Penicillin and ciprofloxacin resistance among *N. gonorrhoeae* isolates by DHB, 2015

DHB	Penicillin		Ciprofloxacin	
	Number tested	% resistant	Number tested	% resistant
Northland	21	4.8	28	21.4
Auckland region[a]	-	-	581	26.3
Waikato	69	11.6	87	52.9
Lakes	5	0.0	14	14.3
Bay of Plenty	-	-	29	24.1
Tairawhiti	-	-	11	27.3
Taranaki[b]	-	-	-	-
Hawke's Bay	38	10.5	43	14.0
MidCentral/Whanganui	-	-	18	16.7
Wairarapa	-	-	-	-
Wellington region[c]	1	100.0	36	55.6
Nelson Marlborough	4	0.0	4	75.0
West Coast	-	-	-	-
Canterbury	42	14.3	75	50.7
South Canterbury	1	0.0	1	100.0
Southern	17	5.9	17	29.4
Total[a]	**198**	**10.6**	**944**	**31.0**

[a] Waitemata, Auckland and Counties Manukau DHBs.
[b] Data incomplete for Taranaki DHB.
[c] Hutt Valley and Capital & Coast DHBs.

CLINIC SURVEILLANCE OF GONORRHOEA

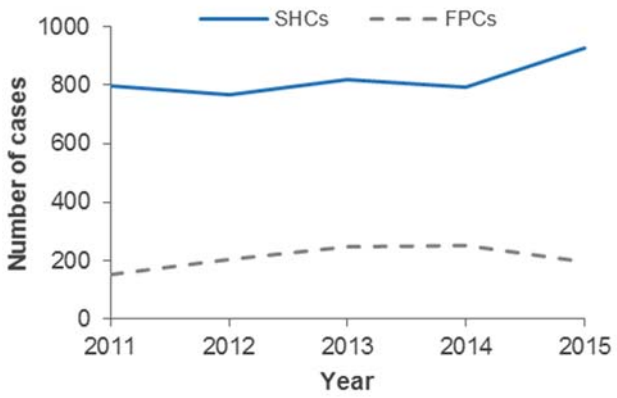
NATIONAL ANALYSIS

Gonorrhoea case numbers reported in 2015 (Table 42) increased in SHCs by 16.9% from 794 in 2014 and decreased in FPCs by 22.5% from 253 in 2014. In general case numbers reported by both clinic types have increased from 2011 (Figure 26).

Table 42. Gonorrhoea case numbers by clinic type, 2015

Clinic type	Total number of cases
SHC	928
FPC	196
Total	**1124**

Figure 26. Gonorrhoea case numbers by clinic type, 2011–2015



DHB COUNTS

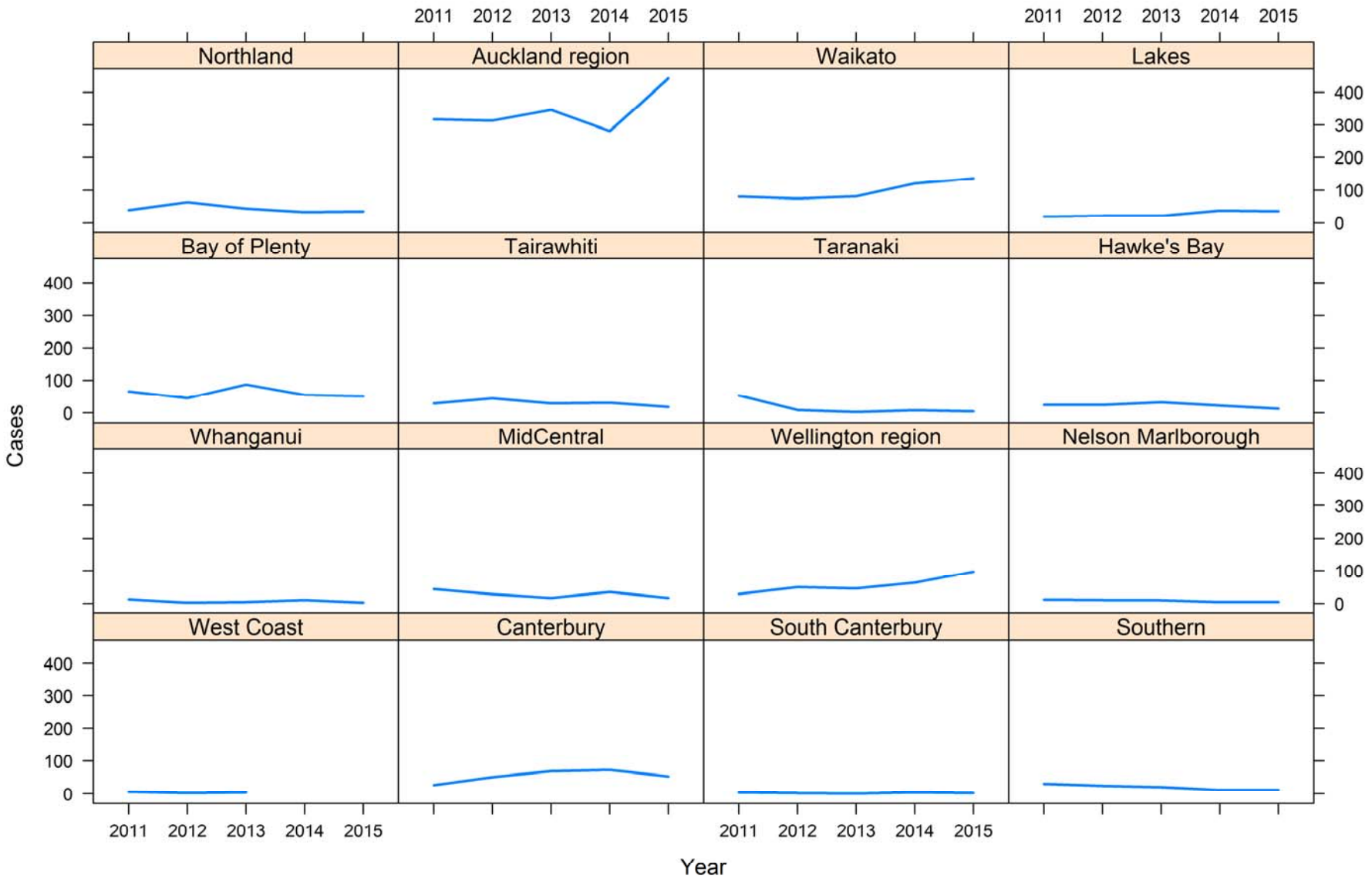
Table 43. Gonorrhoea case numbers by clinic type and DHB, 2015

DHB	Clinic type		Total
	SHC	FPC	
Northland	36	5	41
Auckland region[a]	442	65	507
Waikato	136	35	171
Lakes	37	0	37
Bay of Plenty	51	2	53
Tairawhiti	18	33	51
Taranaki	5	1	6
Hawke's Bay	13	0	13
Whanganui	3	6	9
MidCentral	17	0	17
Wellington region[b]	97	11	108
Nelson Marlborough	5	15	20
West Coast	1	1	2
Canterbury	53	12	65
South Canterbury	2	0	2
Southern	12	10	22

[a] Waitemata, Auckland and Counties Manukau DHBs. [b] Hutt Valley and Capital & Coast DHBs.

Variation in trends of cases reported to SHCs by DHB were seen from 2011 to 2015 (Figure 27) with an increase, mostly seen in the main urban centres, including Waikato. These may reflect patterns in clinic attendance.

Figure 27. Gonorrhoea case numbers in SHCs by DHB, 2011–2015



Note: no cases were reported in West Coast DHB in 2014 and one case was reported in 2015.

SEX, AGE AND ETHNICITY DISTRIBUTION OF GONORRHOEA CASES

2015 analysis

Sex was recorded for all but three gonorrhoea cases in 2015. More cases of gonorrhoea were reported in both males and females across both clinic types. The difference in sex distribution between SHCs and FPCs reflects the high proportion of female attendees at FPCs (in 2015, the male to female ratio of attendees at FPCs was 1:22) (Table 44).

Table 44. Gonorrhoea case by sex and clinic type, 2015

Sex	Clinic type	
	SHC	FPC
Male	661	50
Female	265	145
Total[a]	**928**	**196**

[a] Includes unknown sex.

Age was recorded for all gonorrhoea cases in 2015. A large proportion of the reported cases of gonorrhoea were aged less than 25 years: 40.8% in SHCs and 74.5% in FPCs (Figure 28 and Figure 29).

Figure 28. Gonorrhoea case numbers reported by SHCs by age group and sex, 2015

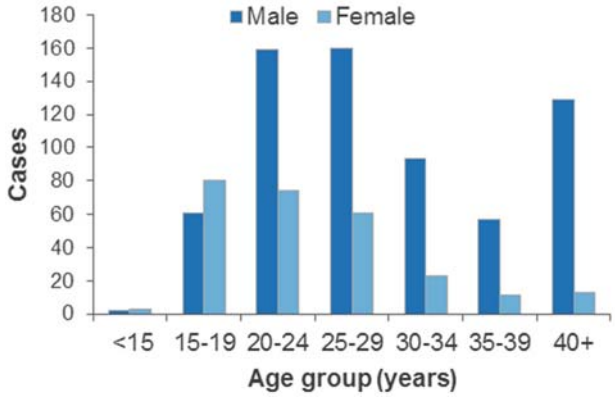
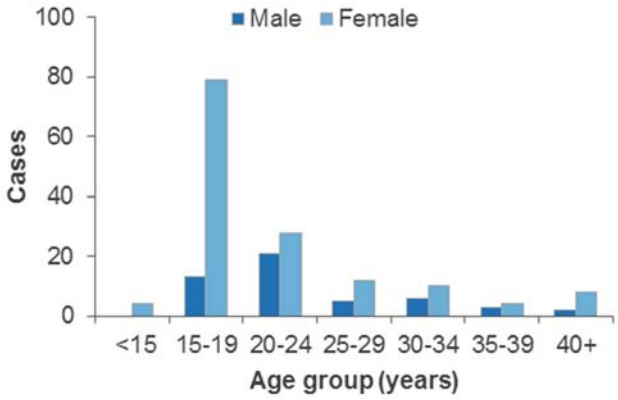


Figure 29. Gonorrhoea case numbers reported by FPCs by age group and sex, 2015



Ethnicity was recorded by SHCs and FPCs for over 98% of gonorrhoea cases. In both SHCs and FPCs the majority of female cases reported Māori ethnicity (57.7% and 55.9%, respectively), whereas for males, the highest percentage of cases reported European ethnicity (51.3% and 46.0%, respectively). (Table 45).

Table 45. Gonorrhoea cases by ethnicity, sex and clinic setting, 2015

Ethnicity	SHC		FPC	
	Male	Female	Male	Female
European	339	79	23	38
Māori	162	153	20	81
Pacific peoples	64	21	5	20
Other	89	11	2	3
Unknown	7	1	0	3
Total[a]	**661**	**265**	**50**	**145**

[a] Excludes unknown sex and transgender.

Trends in sex, age and ethnicity

Between 2011 and 2015, the number of confirmed gonorrhoea cases diagnosed in both SHCs and FPCs changed slightly or remained stable in most age groups for both males and females. Case numbers diagnosed in FPCs increased 41% (from 56 to 79 cases) for females in the 15–19 years age group. For males, case numbers increased in those over 25 years of age, notably in the 40 years and over age group (187%, from 45 to 129 cases) (Figure 30 and Figure 31).

Figure 30. Gonorrhoea cases in SHCs by sex and age group, 2011–2015

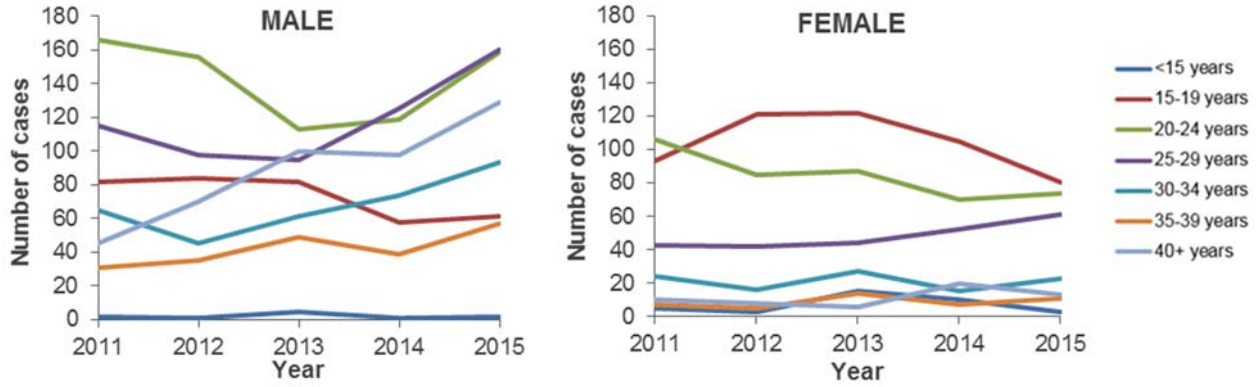
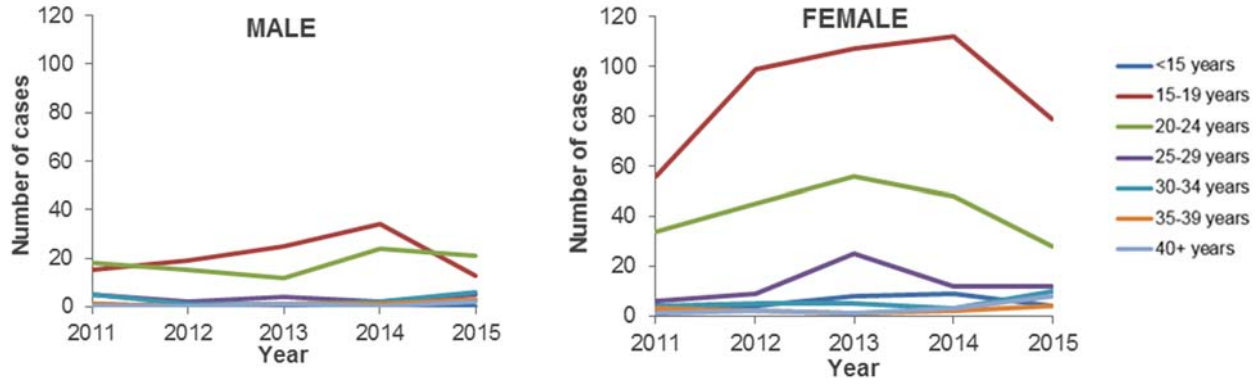


Figure 31. Gonorrhoea cases in FPCs by sex and age group, 2011–2015



In SHCs, there was an increase in the number of gonorrhoea cases diagnosed in the European ethnic group, and a decrease in cases in the Pacific peoples ethnic group from 2011 to 2015 (Figure 32). In FPCs, there was an increase in cases diagnosed in all ethnic groups during the period. However, there was a 29% decrease in case numbers in the Māori ethnic group from 2014 to 2015 (from 143 to 102 cases) (Figure 33).

Figure 32. Gonorrhoea cases reported from SHCs by ethnicity, 2011–2015

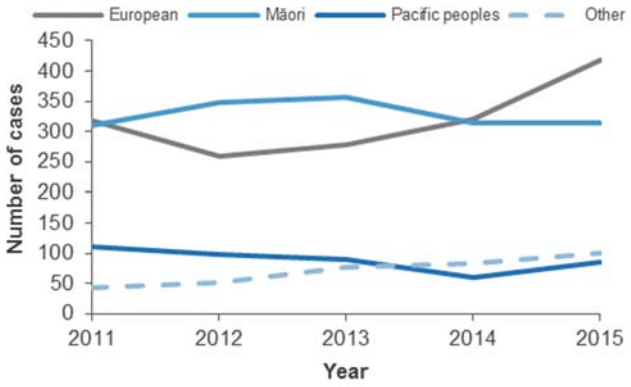
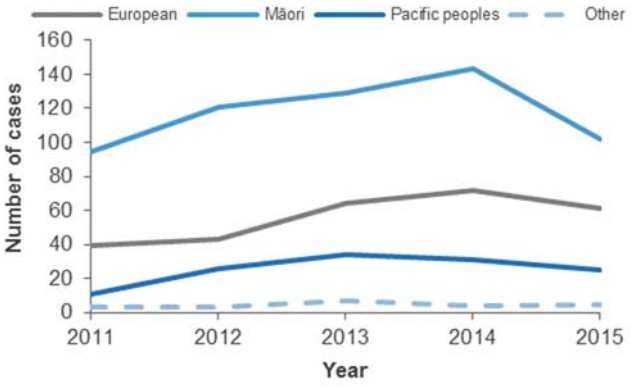


Figure 33. Gonorrhoea cases reported from FPCs by ethnicity, 2011–2015



SITE OF INFECTION

2015 analysis

In 2015, gonorrhoea cases were most commonly confirmed from a sample taken at a urogenital site in both clinic types: 66.1% of SHC cases and 90.8% of FPC cases (Table 46).

Table 46. Gonorrhoea cases by site of infection and clinic setting, 2015

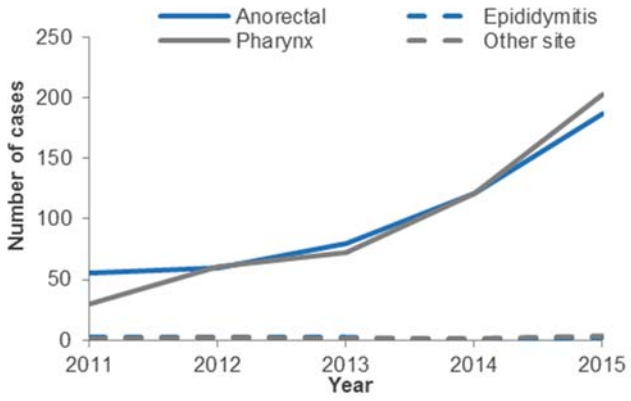
Site	Clinic type	
	SHC	FPC
Urogenital	613	178
Anorectal	192	4
Pelvic inflammatory disease/epididymitis	13	10
Pharynx	214	5
Other site	4	0
Total[a]	**928**	**196**

[a] Cases where the infection was confirmed at more than one site are included in the tally for each site but are only counted once in the total.

Trends in site of infection

From 2011 to 2015, there were increases in anorectal and pharyngeal gonorrhoea infections in males (from 55 to 187 cases and from 30 to 203 cases, respectively) (Figure 34). Gonorrhoea infections at other sites have remained low. In females, the number of non-complicated non-urogenital gonorrhoea infections were very low between 2011 and 2015, hence trend analysis is not presented.

Figure 34. Site of infection, non-complicated non-urogenital gonorrhoea cases in males in SHCs, 2011–2015COMPLICATED INFECTIONS



2015 analysis

Complicated infections (epididymitis in males and pelvic inflammatory disease (PID) in females) were reported for 1.4% of gonorrhoea cases in SHCs and 5.1% of cases in FPCs (Table 46, Table 47 and Table 48).

Table 47. Epididymitis cases reported in males by age group, ethnicity and clinic type, 2015

Ethnicity	SHC			FPC		
	<25 years	25+ years	Total	<25 years	25+ years	Total
European	1	1	2	0	0	0
Māori	0	1	1	0	0	0
Pacific peoples	0	0	0	0	0	0
Other	0	0	0	0	0	0
Unknown	0	0	0	0	0	0
Total	**1**	**2**	**3**	**0**	**0**	**0**

Table 48. PID cases reported in females by age group, ethnicity and clinic type, 2015

Ethnicity	SHC			FPC		
	<25 years	25+ years	Total	<25 years	25+ years	Total
European	1	1	2	3	3	6
Māori	6	2	8	3	0	3
Pacific peoples	0	0	0	0	1	1
Other	0	0	0	0	0	0
Unknown	0	0	0	0	0	0
Total	**7**	**3**	**10**	**6**	**4**	**10**

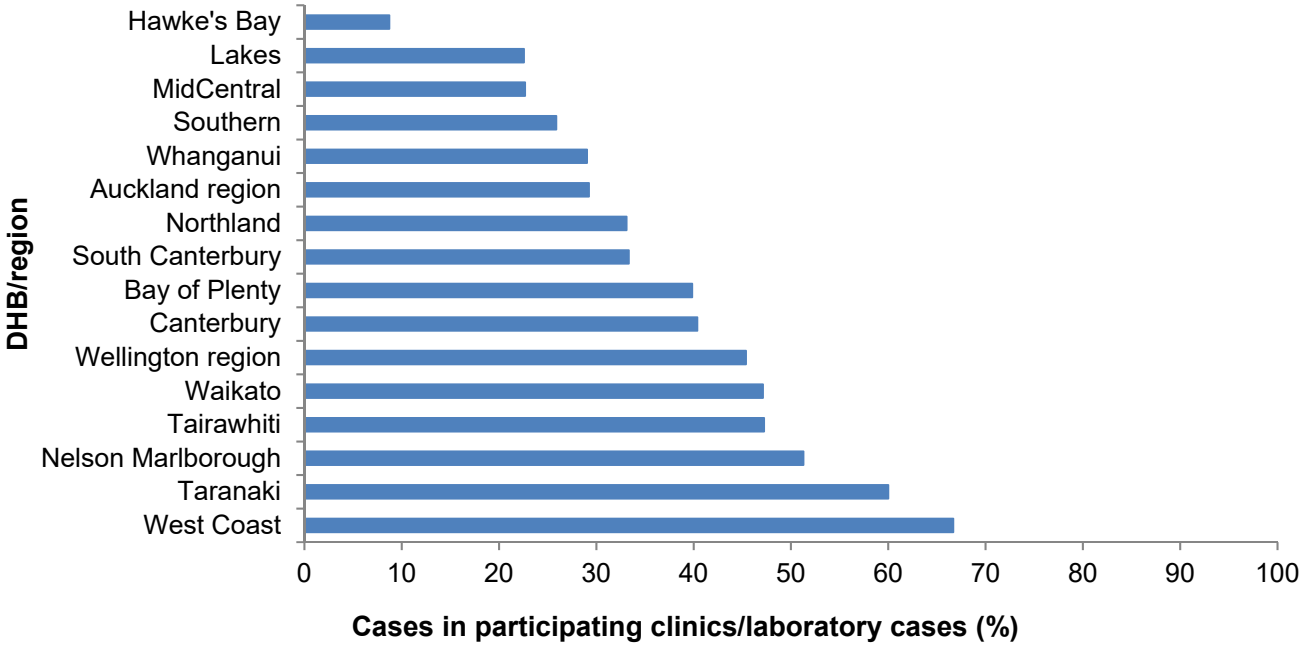
Trends in complicated infections

Case numbers of complicated gonorrhoea infections reported by SHCs were very low for both males and females between 2011 and 2015, hence trend analysis is not presented.

COMPARISON OF LABORATORY AND CLINIC SURVEILLANCE

The number of cases seen in participating clinics (all SHCs and FPCs) as a proportion of laboratory cases are presented in Figure 35. The proportion of cases diagnosed in settings other than a participating clinic ranged from 33% to 91% with an average of 62% nationally. Gonorrhoea cases that were not reported from a SHC or FPC are likely to have been diagnosed in a primary care facility.

Figure 35. Cases of gonorrhoea seen in participating clinics* as a proportion (%) of all positive laboratory tests by DHB, 2015



- All public sexual health and family planning clinics in New Zealand participate in clinic-based STI surveillance

GENITAL HERPES (FIRST PRESENTATION)

Genital herpes infection is caused by the *Herpes simplex* virus (HSV) types 1 or 2. HSV-2 is traditionally regarded as the primary cause of genital infection and HSV-1 is mainly associated with oral infection. However, HSV-1 has been increasingly associated with genital infection, particularly among younger women [16]. The incidence of HSV-2 found in the Dunedin birth cohort study has been consistently higher in women than men and peaked for women in their early to mid-twenties at 19.1 per 1000 person-years and for men in their late twenties to early thirties at 14.1 per 1000 person-years. The cumulative incidence by age 38 years was 27% for women and 17% for men [17].

Symptomatic first infections are associated with anogenital ulcerations and recurrent infections are common. Vaginal delivery in pregnant women with active genital infection carries a higher risk of infection in the foetus or newborn, particularly in a primary infection. Genital herpes can cause severe systemic disease in neonates and in those who are immune suppressed [13]. The ulcerative lesions of HSV facilitate the transmission of HIV infection [18].

KEY FINDINGS: 2015

- In 2015, 1089 first presentations of genital herpes were reported; 824 cases were seen in SHCs and 265 cases in FPCs, a decrease from 2014 in both clinic types
- Nationally case numbers have decreased in SHCs but shown a small increase in FPCs from 2011–2015 but there is variation across DHBs for the trend data for SHCs with an increasing trend seen in the Auckland and Wellington regions and Canterbury DHB
- More cases were reported in females than males across both clinic types
- Since 2011 a decrease has occurred in case numbers reported by SHCs in females aged 15–19 and 20–24 years but an increase in case numbers reported by SHCs for both males and females in the 25–29 years age group. This compares with generally stable numbers in males reported by FPCs (note very low numbers) but an increasing trend in females reported by FPCs across all age groups between 15 and 39 years.
- 34.6% of cases reported from SHCs were aged <25 years and 61.1% of cases reported from FPCs were aged <25 years
- The majority of cases reported by both SHCs and FPCs were of European ethnicity (68.4% and 78.1% respectively)

COMMENTARY

Although case numbers of genital herpes have shown a decreasing trend over the past five years this must be interpreted with caution as surveillance is sentinel clinic-based and thus rates are not able to be calculated. Differing patterns between years and clinic types may reflect changes in clinic attendance rather than changes in incidence. However, there are several persistent patterns of note. The increasing trend seen in genital herpes case numbers in Auckland and Wellington regions and Canterbury DHB when compared with a decreasing trend in other areas, is of interest as these three areas also show an increasing trend in other STIs (apart from HPV) reported by SHCs as well as increasing rates of gonorrhoea.

CLINIC SURVEILLANCE OF GENITAL HERPES (FIRST PRESENTATION)

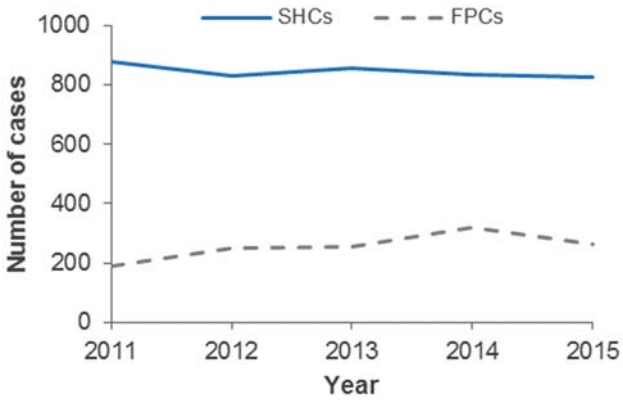
NATIONAL ANALYSIS

Genital herpes case numbers reported in 2015 (Table 49) decreased in SHCs and FPCs by 1.1% and 17.4% respectively, compared with 2014. Since 2011 case numbers have decreased in SHCs and increased in FPCs (Figure 36).

Table 49. Genital herpes (first presentation) case numbers by clinic type, 2015

Clinic type	Total number of cases
SHC	824
FPC	265
Total	**1089**

Figure 36. Genital herpes (first presentation) cases by clinic type, 2011–2015



Routine clinic surveillance methods in New Zealand do not facilitate the collection of data about the type of HSV infection. Therefore, it is not possible to determine if the trends in genital herpes differ by type of viral infection.

DHB COUNTS

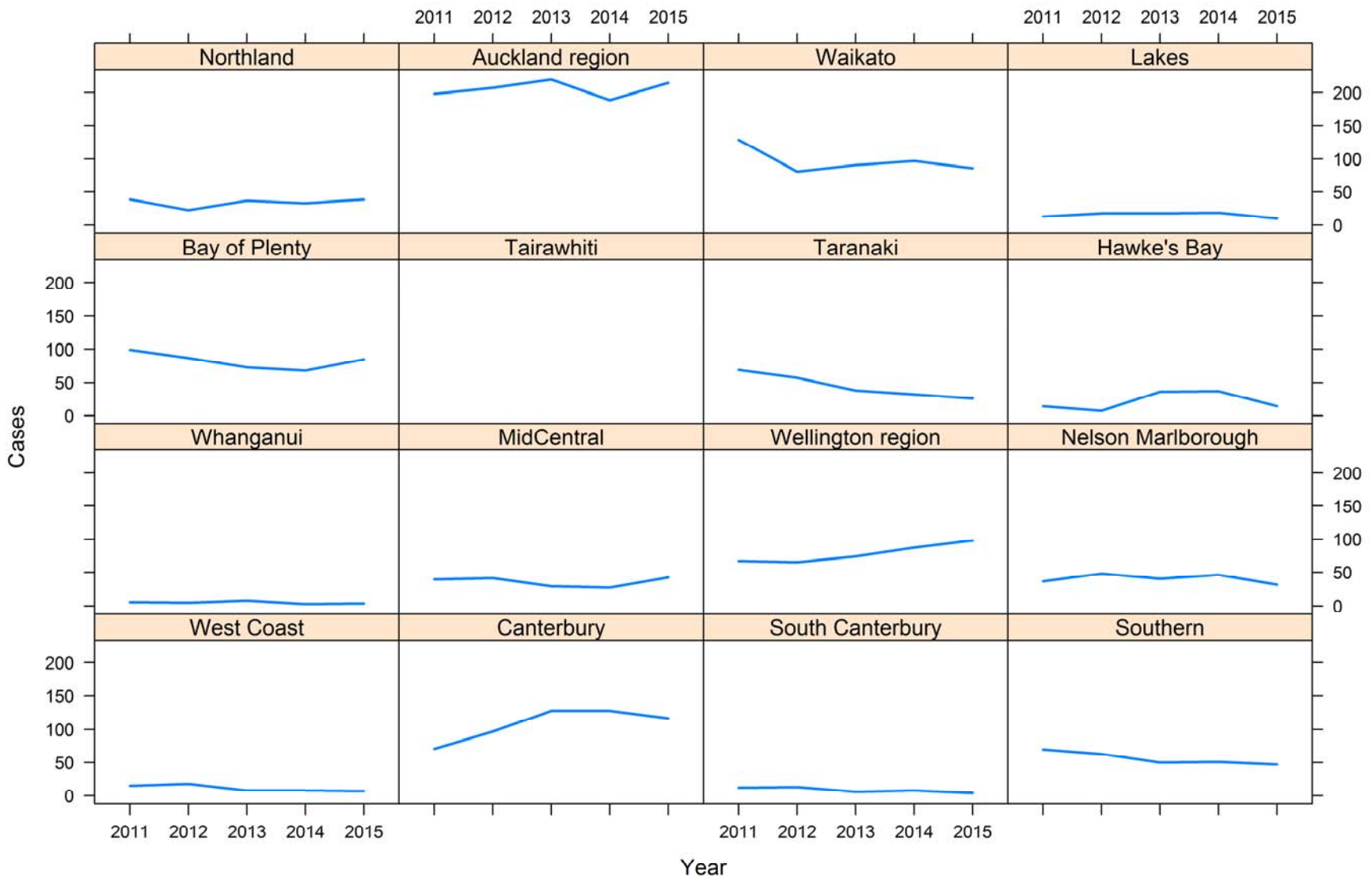
Table 50. Genital herpes (first presentation) case numbers by clinic type and DHB, 2015

DHB	Clinic type		Total
	SHC	FPC	
Northland	39	7	46
Auckland region[a]	214	48	262
Waikato	86	19	105
Lakes	10	0	10
Bay of Plenty	85	5	90
Tairawhiti[b]	-	8	8
Taranaki	26	4	30
Hawke's Bay	14	0	14
Whanganui	4	3	7
MidCentral	42	0	42
Wellington region[c]	98	38	136
Nelson Marlborough	31	38	69
West Coast	7	2	9
Canterbury	117	61	178
South Canterbury	4	10	14
Southern	47	22	69

[a] Waitemata, Auckland and Counties Manukau DHBs. [b] SHC data not available for Tairawhiti DHB.
[c] Hutt Valley and Capital & Coast DHBs.

Variations in trends of case numbers reported to SHCs by DHB were seen from 2011 to 2015 (Figure 37). These may reflect patterns in clinic attendance.

Figure 37. Genital herpes case numbers in SHCs by DHB, 2011–2015



Note: SHC data not available for Tairawhiti DHB.

SEX, AGE AND ETHNICITY DISTRIBUTION OF GENITAL HERPES

2015 analysis

Sex was recorded for all but three cases of genital herpes. More cases of genital herpes were reported in females than males across both clinic types. The difference in sex distribution between SHCs and FPCs reflects the high proportion of female attendees at FPCs (in 2015, the male to female ratio of attendees at FPCs was 1:22) (Table 51).

Table 51. Genital herpes (first presentation) cases by sex and clinic type, 2015

Sex	Clinic type	
	SHC	FPC
Male	401	49
Female	423	213
Total[a]	**824**	**265**

[a] Includes unknown sex.

Age was recorded for all cases of genital herpes except one. A large proportion of the cases of genital herpes were aged less than 25 years: 34.6% in SHCs and 61.1% in FPCs. The mean age of genital herpes cases was 30.6 years in SHCs and 25.0 years in FPCs .

Figure 38. Number of cases of genital herpes reported by SHCs by age group and sex, 2015

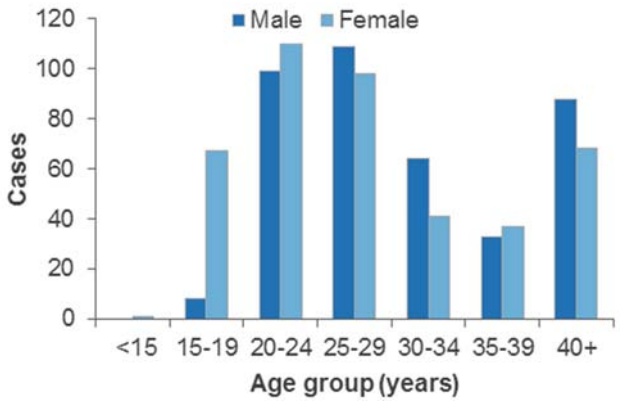
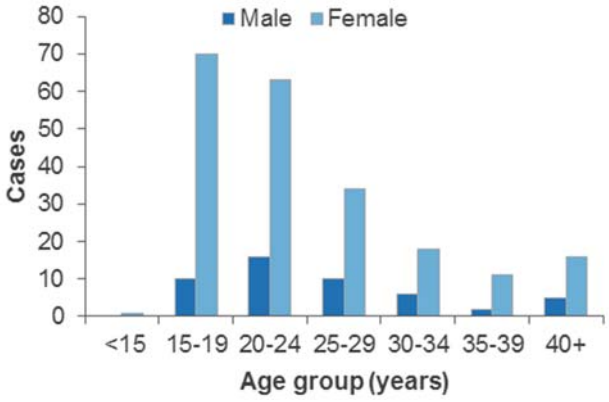


Figure 39. Number of cases of genital herpes reported by FPCs by age group and sex, 2015



Ethnicity was recorded by SHCs and FPCs for over 97% of cases of genital herpes. The highest percentage of cases for both SHCs and FPCs were of European ethnicity (68.4% and 78.1%, respectively), followed by Māori (15.8% and 14.8%, respectively) (Table 52).

Table 52. Genital herpes (first presentation) cases by ethnicity, sex and clinic type, 2015

Ethnicity	SHC		FPC	
	Male	Female	Male	Female
European	266	285	44	153
Māori	60	67	4	34
Pacific peoples	9	13	0	1
Other	56	50	0	17
Unknown	10	8	1	8
Total[a]	**401**	**423**	**49**	**213**

[a] Excludes unknown sex.

Trends in sex, age and ethnicity

Between 2011 and 2015, the trend for the number of case numbers diagnosed in both clinic types varied by age group and sex (Figure 40).

Figure 40. Genital herpes (first presentation) cases in SHCs by sex and age group, 2011–2015

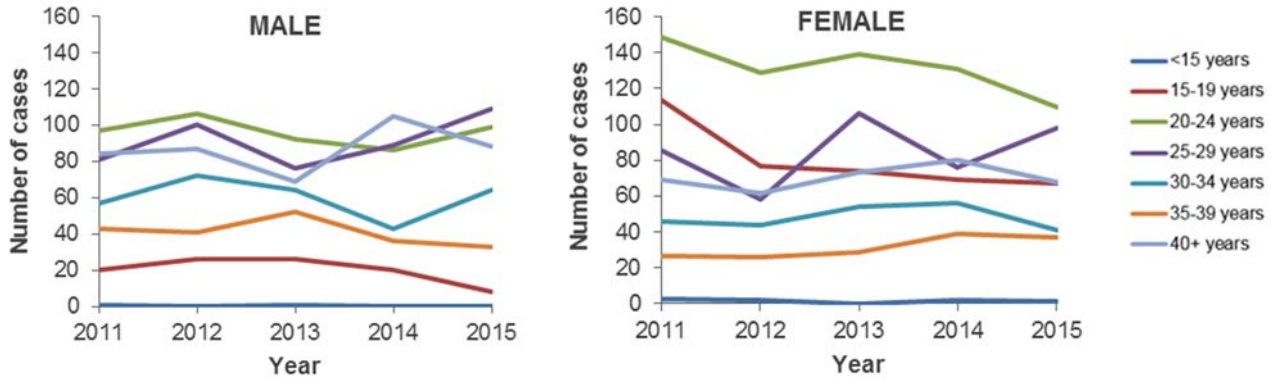
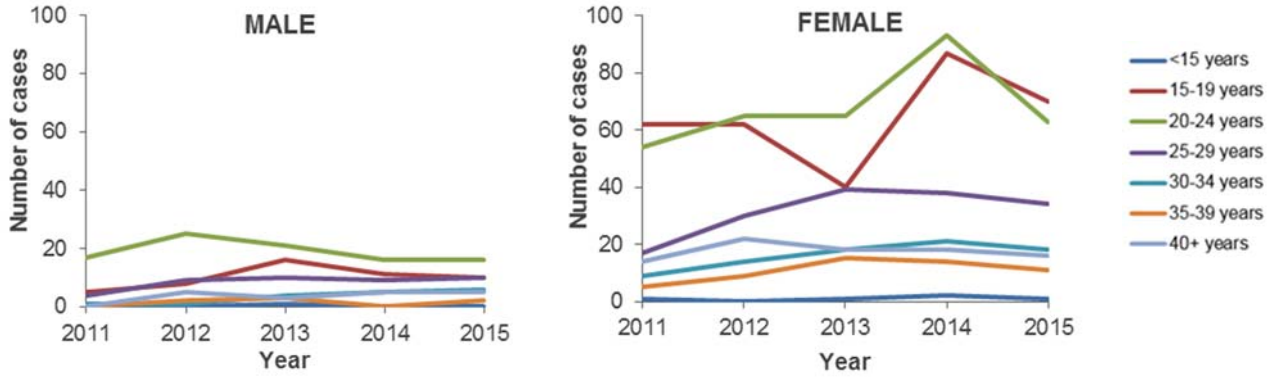


Figure 41. Genital herpes (first presentation) cases in FPCs by sex and age group, 2011–2015



In SHCs there was a decrease in the number of cases diagnosed in all ethnic groups except Other from 2011 to 2015. (Figure 42). This contrasts with a generally increasing or stable trend in case numbers in all ethnic groups in FPCs (Figure 43).

Figure 42. Number of genital herpes (first presentation) cases reported from SHCs by ethnicity, 2011–2015

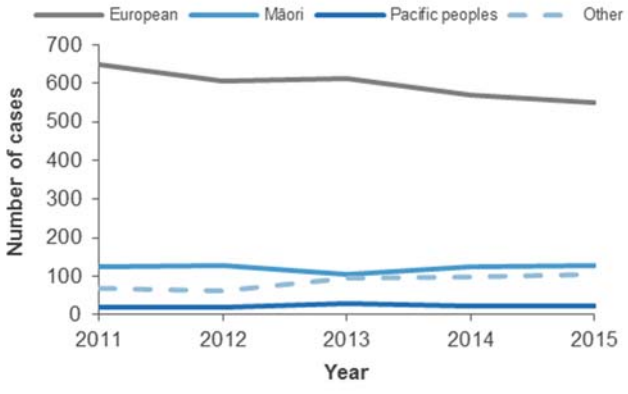
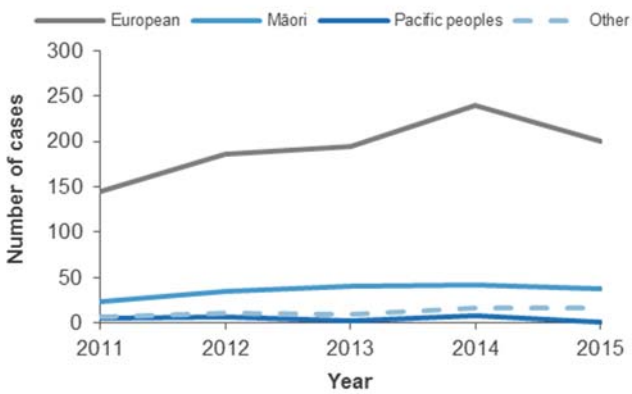


Figure 43. Number of genital herpes (first presentation) cases reported from FPCs by ethnicity, 2011–2015



GENITAL WARTS (FIRST PRESENTATION)

Genital warts, a visible manifestation of human papillomavirus (HPV) infection, are of particular public health importance because of the strong association between some types of HPV (mainly types 16 and 18) and cervical, penile, anal and oropharyngeal cancers. However, approximately 90% of genital warts are caused by HPV types 6 or 11, both of which are considered “low risk” HPV types for developing cancer [19]. In September 2008, an HPV immunisation programme using a quadrivalent vaccine (covering types 6, 11, 16 and 18) commenced for girls born on or after 1 January 1990. This vaccine is now part of the routine immunisation schedule for girls aged 12 years. Changes announced in 2016 but taking effect from 1 January, 2017, will widen access to include males and females aged 9 to 26 years and see replacement of the quadrivalent vaccine with a 9-valent vaccine [20]. Immunisation coverage varies by birth cohort with 49% of women born in 1991 estimated to have received three doses of quadrivalent HPV vaccine compared with 65% of girls born in 2000 as of 31 December, 2017 [21].

KEY FINDINGS: 2015

- 1692 first presentations of genital warts were reported in 2015. Of these, 1504 were seen in SHCs
- From 2014 to 2015 case numbers decreased in SHCs and FPCs by 15.4% and 16.8% respectively
- More cases were reported in males in SHCs and in females in FPCs
- Between 2011–2015 case numbers have decreased or remained stable in all age groups in SHCs and in those aged <30 years in FPCs
- Decreases in case numbers of >50% were seen in the 15–19 years age group for both clinic types and in the 20–24 years age groups for SHCs from 2011–2015
- Case numbers reported from both clinic types have decreased in European, Māori and Pacific peoples ethnic groups from 2011 to 2015

COMMENTARY

The decreasing trend in the number of cases of genital warts reported from both clinic types continued in 2015 and remains most notable in both females and males aged 15–24 years. These decreases follow the introduction of HPV vaccine onto the routine immunisation schedule for girls aged 12 years from late 2008, along with a catch up programme targeting girls born on or after 1 January 1990 [22].The decline in genital warts in the clinic data is consistent with findings from Australia [23].

CLINIC SURVEILLANCE OF GENITAL WARTS (FIRST PRESENTATION)

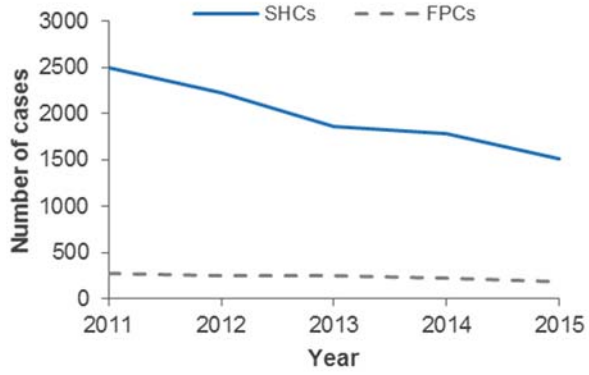
NATIONAL ANALYSIS

In 2015, genital warts was the most commonly reported viral STI in New Zealand. Case numbers reported in 2015 (Table 53) decreased in SHCs and FPCs by 15.4% and 16.8% respectively, compared with 2014. This continued the decreasing trends noted since 2011 (Figure 44).

Table 53. Genital warts (first presentation) case numbers by clinic type, 2015

Clinic type	Total number of cases
SHC	1504
FPC	188
Total	**1692**

Figure 44. Genital warts (first presentation) cases by clinic type, 2011–2015



DHB COUNTS

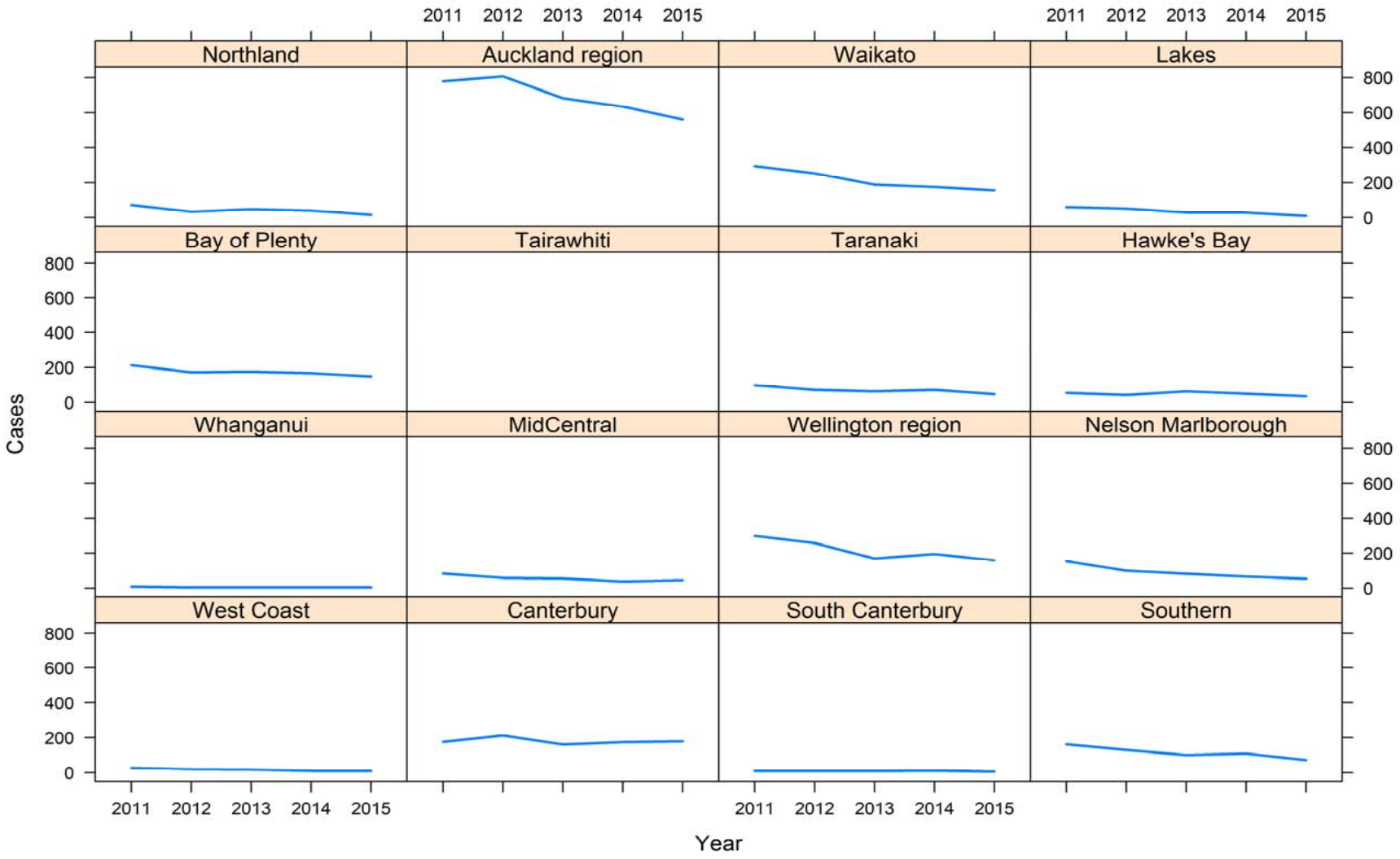
Table 54. Genital warts (first presentation) case numbers by clinic type and DHB, 2015

DHB	Clinic type		Total
	SHC	FPC	
Northland	16	0	16
Auckland region[a]	561	63	624
Waikato	156	18	174
Lakes	10	0	10
Bay of Plenty	150	6	156
Tairawhiti[b]	-	3	3
Taranaki	47	5	52
Hawke's Bay	35	0	35
Whanganui	5	2	7
MidCentral	45	0	45
Wellington region[c]	158	32	190
Nelson Marlborough	53	5	58
West Coast	10	1	11
Canterbury	179	26	205
South Canterbury	6	3	9
Southern	73	24	97

[a] Waitemata, Auckland and Counties Manukau DHBs. [b] SHC data not available for Tairawhiti DHB.
[c] Hutt Valley and Capital & Coast DHBs.

From 2011 to 2015, SHCs in all DHBs except Canterbury reported a decrease in the number of cases of genital warts (Figure 45).

Figure 45. Genital warts case numbers in SHCs by DHB, 2011–2015



Note: SHC data not available for Tairawhiti DHB.

SEX, AGE AND ETHNICITY DISTRIBUTION OF GENITAL WARTS

2015 analysis

Sex was recorded for all genital warts cases except three. More cases of genital warts were seen in males than females at SHCs (60.6%). By contrast, more cases of genital warts were seen in females than males at FPCs (66.5%) (Table 55). The difference in sex distribution between SHCs and FPCs reflects the high proportion of female attendees at FPCs (in 2015, the male to female ratio of attendees at FPCs was 1:22).

Table 55. Genital warts (first presentation) cases by sex and clinic type, 2015

Sex	Clinic type	
	SHC	FPC
Male	912	61
Female	591	125
Total[a]	**1504**	**188**

[a] Includes unknown sex.

Age was recorded for all genital warts cases. The proportion of cases aged less than 25 years was larger in FPCs (62.8%) than in SHCs (32.8%) (Figure 46 and Figure 47).

Figure 46. Number of cases of genital warts reported by SHCs by age group and sex, 2015

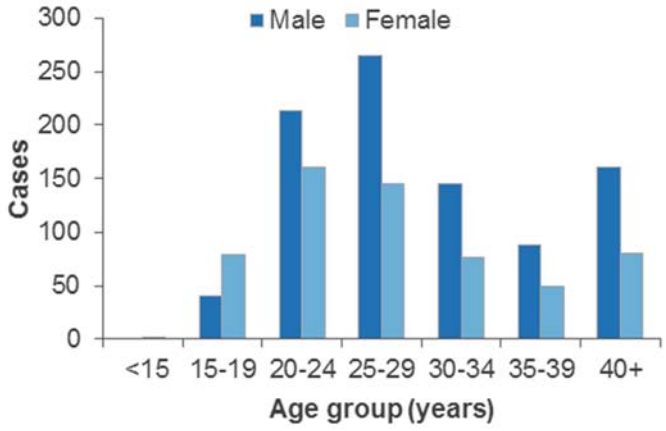
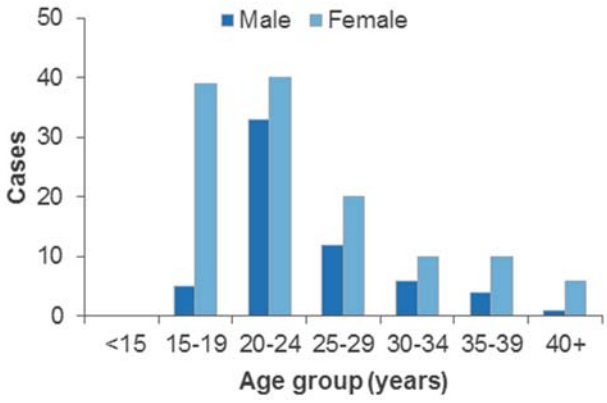


Figure 47. Number of cases of genital warts reported by FPCs by age group and sex, 2015



Ethnicity was recorded by SHCs and FPCs for over 95% of genital warts cases. The highest percentage of cases for both SHCs and FPCs were of European ethnicity (67.7% and 73.3%, respectively) (Table 56).

Table 56. Genital warts (first presentation) cases by ethnicity, sex and clinic type, 2015

Ethnicity	SHC		FPC	
	Male	Female	Male	Female
European	611	362	47	81
Māori	80	103	6	25
Pacific peoples	44	22	1	2
Other	136	79	3	10
Unknown	41	25	4	7
Total[a]	**912**	**591**	**61**	**125**

[a] Excludes unknown sex.

Trends in sex, age and ethnicity

Between 2011 and 2015, the number of confirmed genital warts case numbers decreased or remained stable in all age groups in SHCs and in those aged less than 30 years in FPCs. Decreases of greater than 50% were seen in the 15–19 years age group for both clinic types and in the 20–24 years age group for SHCs only (Figure 48 and Figure 49).

Figure 48. Number of genital warts (first presentation) cases in SHCs by sex and age group, 2011–2015

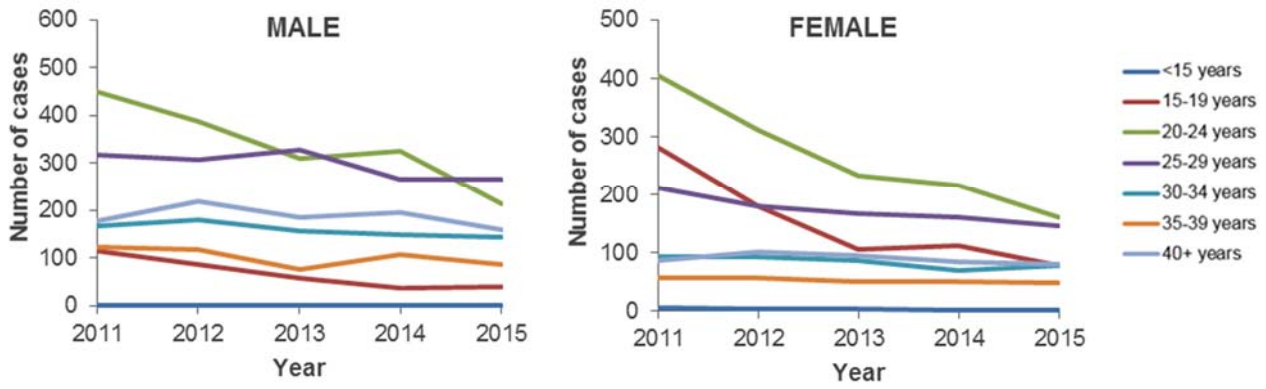
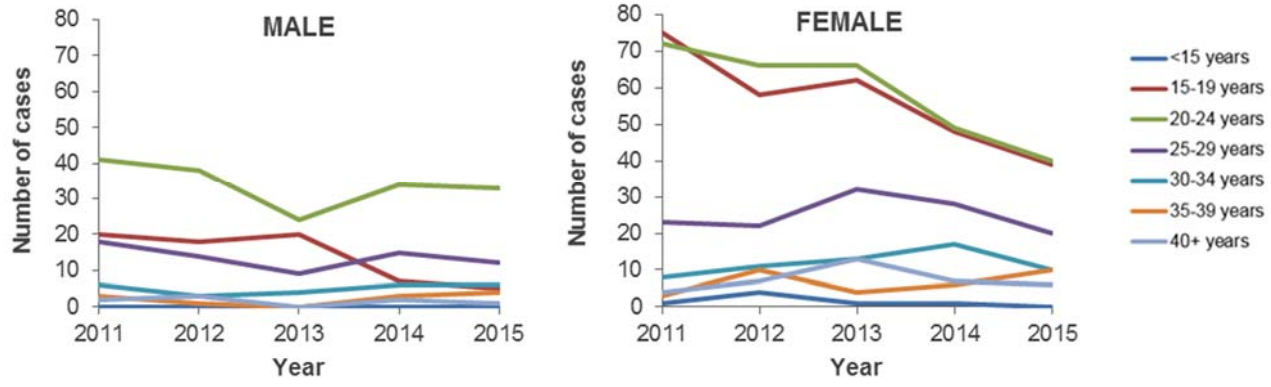


Figure 49. Number of genital warts (first presentation) cases in FPCs by sex and age group, 2011–2015



From 2011 to 2015, there was a decrease in the number of genital warts cases diagnosed in the European, Māori and Pacific peoples ethnic groups in both clinic types (Figure 50 and Figure 51).

Figure 50. Number of genital warts (first presentation) cases reported from SHCs by ethnicity, 2011–2015

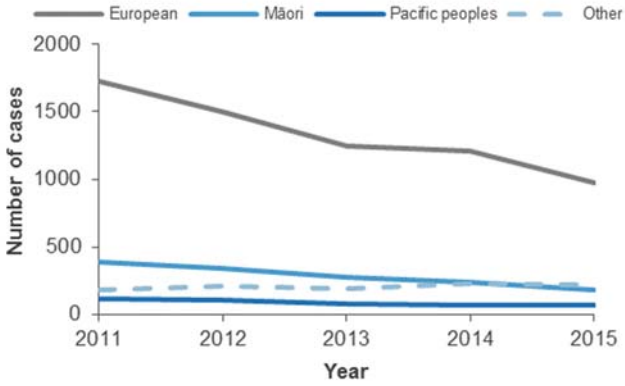
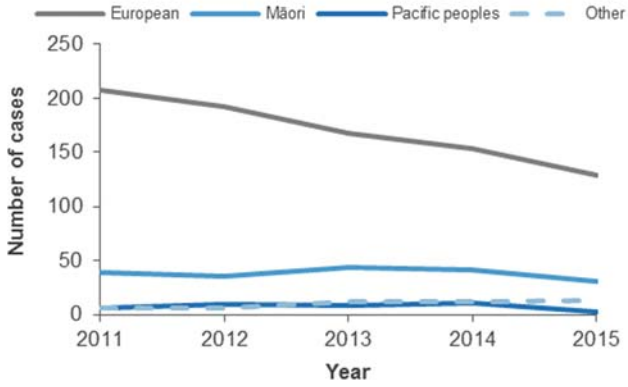


Figure 51. Number of genital warts (first presentation) cases reported from FPCs by ethnicity, 2011–2015



INFECTIOUS SYPHILIS

Syphilis is a serious infection caused by Treponema pallidum with both acute and chronic stages. The first stage of the disease presents as an ulcerative infection that heals spontaneously. If untreated, secondary syphilis will develop in two to eight weeks, and one-third of cases will progress to tertiary syphilis some years later. Transmission most commonly occurs by sexual contact during the first year after infection, but may also occur trans-placentally for at least four years after infection. Untreated syphilis during pregnancy always results in foetal infection and about half of pregnancies affected will end in miscarriage or still-birth. Congenital infections and complications may also occur [24]. Only cases of infectious syphilis (primary, secondary and early latent) are reported by clinics for surveillance purposes.

KEY FINDINGS: 2015

- 225 infectious syphilis cases were reported in 2015, an increase from 2014 (140 cases) and 2013 (82 cases)
- The majority of cases were reported from the Auckland region (64.9%, 146 cases) and Canterbury DHB (23 cases)
- 89.8% of cases reported by SHCs and FPCs were male
- 219 cases were reported from SHCs and therefore had enhanced surveillance data provided:
    - 200 cases were male, 3 transgender and 16 female
    - Highest number of cases in males were in the 20–25, 25–29 and 30–35 years age groups and there has been an increasing trend in these age groups since 2011
    - Of the 200 cases in males, 84.8% (167/197) were reported to be MSM
    - 21% of cases were reported to be heterosexual, an increase from 14% reported in 2014
    - Similar to 2011–2014, the majority of the MSM cases reported New Zealand European ethnicity (57.1%), followed by Asian (13.1%) and Māori (12.5%)
    - The most common country of infection was reported to be New Zealand
    - The most common primary reason for testing for both MSM and heterosexuals was clinical symptoms or suspicion, a similar finding to the previous five years
    - 29.6% of MSM cases had a concurrent STI diagnosis, most commonly chlamydia, and 27.2% were HIV seropositive
    - The number of HIV seropositive cases in MSM continued to increase, and have shown a fourfold from 2011 to 2015 (11 to 46 cases).

COMMENTARY

Infectious syphilis in New Zealand continues to be most commonly reported as an infection in MSM with the majority of cases concentrated in areas with large urban populations. However, the increased proportion of cases reported in 2015 that were heterosexual is of concern, as is the changing pattern of ethnicity among cases. Both suggest wider transmission, possibly into groups that have not been seen as high risk and may therefore not be offered asymptomatic screening. The low numbers of cases initially tested as “screening”, especially for females, supports this concern. Increasing awareness amongst clinicians that the recent increase in infectious syphilis includes the heterosexual population and promoting the New Zealand Sexual Health Society STI Guidelines would be useful strategies to address these concerns.

CLINIC SURVEILLANCE OF INFECTIOUS SYPHILIS

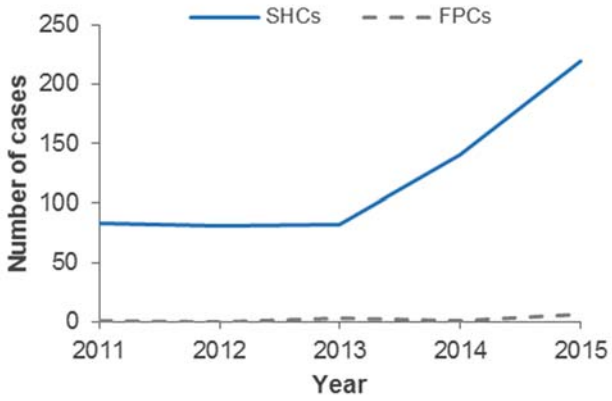
NATIONAL ANALYSIS

Infectious syphilis case numbers reported in 2015 (Table 57) increased in SHCs by 56.4% compared with 2014 (141 cases). Case numbers in FPCs increased slightly from the one case reported in 2014 but remained low. Overall this continued the increasing trend noted since 2013 (Figure 52).

Table 57. Infectious syphilis case numbers by clinic type, 2015

Clinic type	Total number of cases
SHC	219
FPC	6
Total	**225**

Figure 52. Infectious syphilis case numbers by clinic type, 2011–2015



DHB COUNTS

Table 58. Infectious syphilis case numbers by DHB and sex, 2015

DHB	Cases		
	Male	Female	Transgender
Northland	1	0	0
Auckland region[a]	130	14	2
Waikato	9	0	1
Lakes	5	0	0
Bay of Plenty	13	1	0
Tairawhiti[b]	-	-	-
Taranaki	0	0	0
Hawke's Bay	1	0	0
Whanganui	0	0	0
MidCentral	2	0	0
Wellington region[c]	15	2	0
Nelson Marlborough	3	0	0
West Coast	0	0	0
Canterbury	20	3	0
South Canterbury	0	0	0
Southern	3	0	0
Total	**202**	**20**	**3**

[a] Waitemata, Auckland and Counties Manukau DHBs. [b] SHC data not available for Tairawhiti DHB.
[c] Hutt Valley and Capital & Coast DHBs.

Trends in DHB counts

Between 2011 and 2015 SHCs in the Auckland region reported the highest numbers of syphilis cases. Case numbers in the Auckland region increased from 2013 to 2014 (from 41 to 85 cases), and continued to increase in 2015. The number of cases reported in the Wellington region decreased between 2011 and 2014 (from 14 to 3 cases), but increased in 2015. Case numbers in Canterbury increased notably from 2011 to 2012 (from 3 to 29 cases) and has remained at this level since.

SEX, AGE AND ETHNICITY DISTRIBUTION OF SYPHILIS

2015 analysis

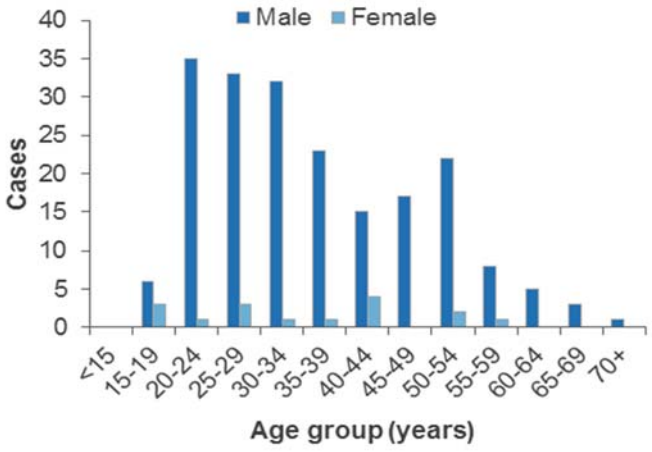
Sex and age were recorded for all cases of infectious syphilis, and the majority (89.8%) were male (Table 59).

Table 59. Infectious syphilis case numbers by sex and clinic type, 2015

Sex	Clinic type	
	SHC	FPC
Male	200	2
Female	16	4
Transgender	3	0
Total	**219**	**6**

In SHCs, a large proportion (79.5%) of the reported syphilis cases were aged 25 years and over, with a mean age of 35.9 years (range: 17–73 years). The number of syphilis cases in SHCs was highest in males aged between 20 and 34 years (100 cases). For females, syphilis case numbers were low and spread across the age groups (Figure 53).

Figure 53. Infectious syphilis case numbers reported by SHCs by age group and sex, 2015



Note: Excludes three transgender cases.

Ethnicity was recorded by SHCs for 99.5% of syphilis cases, and the highest percentage of cases were of European ethnicity (64.7%). In FPCs there was no pattern in the distribution of cases amongst the ethnic groups (Table 60).

Table 60. Infectious syphilis case numbers by ethnicity and clinic type, 2015

Ethnicity	Clinic type	
	SHC	FPC
European	141	2
Māori	32	1
Pacific peoples	9	0
Other	36	1
Unknown	1	2
Total	**219**	**6**

Trends in sex, age and ethnicity

Between 2011 and 2015 syphilis case numbers in SHCs increased in most age groups for males (Figure 54). Case numbers in females attending SHCs were low compared with males and were distributed amongst the age groups.

There were large increases in case numbers in the Māori (357%, from 7 to 32 cases) and European (271%, from 38 to 141 cases) ethnic groups between 2011–2015. However, total case numbers in the Māori ethnic group were much lower compared with the case numbers in the European ethnic group. Case numbers in the Pacific peoples ethnic group have remained low and decreased (50%, from 18 to 9 cases) (Figure 55).

Figure 54. Number of Infectious syphilis cases in SHCs in males by age group, 2011–2015

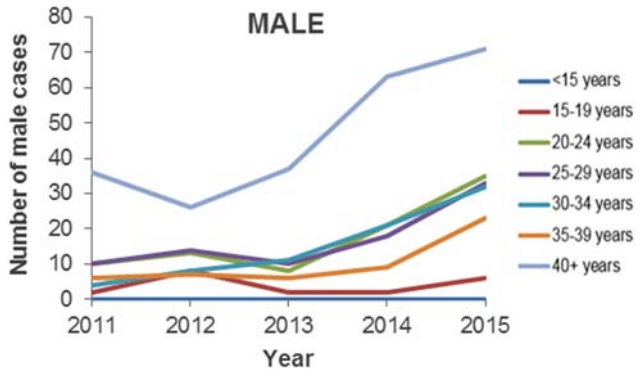
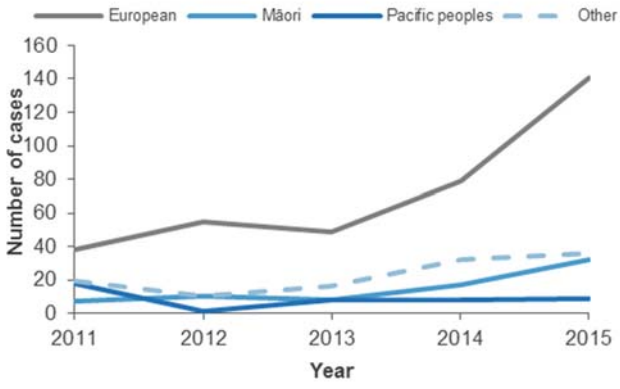


Figure 55. Infectious syphilis case numbers reported from SHCs by ethnicity, 2011–2015



ENHANCED SURVEILLANCE OF INFECTIOUS SYPHILIS

The following analyses are based on data from the enhanced syphilis surveillance. For 2015 this includes all 219 cases reported in the clinic surveillance by SHCs.

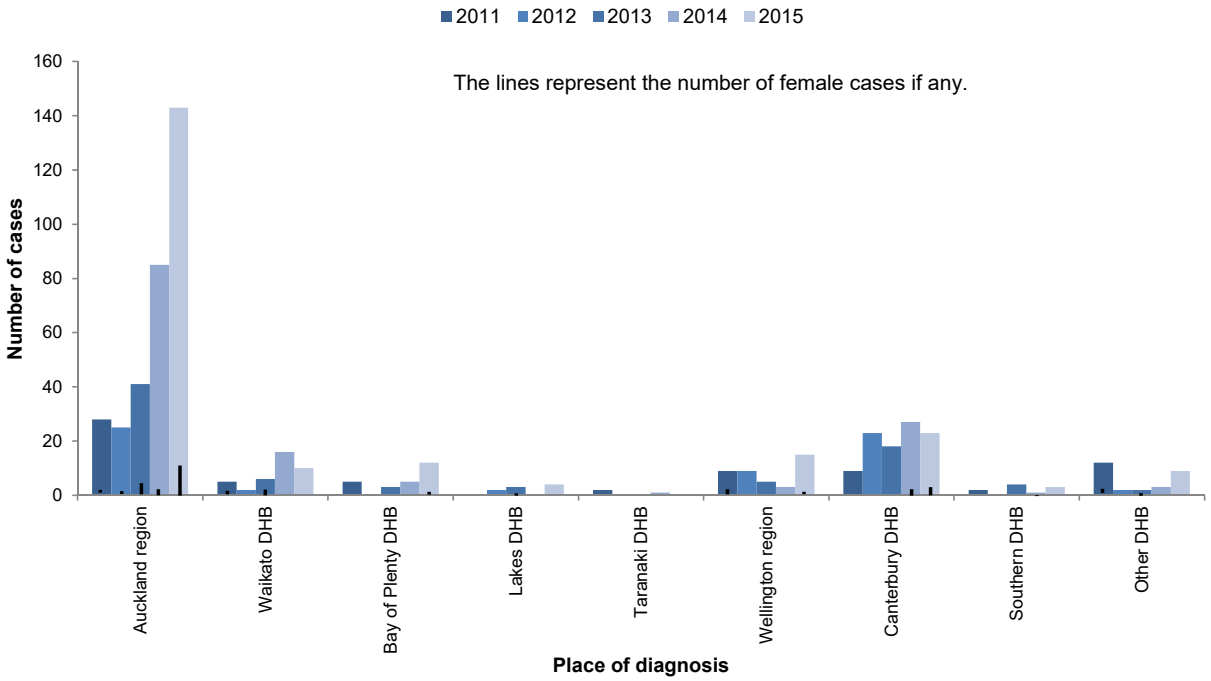
PLACE OF DIAGNOSIS

In 2015, the majority of infectious syphilis cases were diagnosed in the Auckland region (143/219 cases). The 16 female cases reported were diagnosed in the Auckland region (11 cases), Canterbury DHB (3 cases), Lakes DHB and the Wellington region (1 case each). Three transgender cases were reported and were diagnosed in the Auckland region (2 cases) and Waikato DHB (1 case).

Trends

From 2011 to 2015 the number of cases reported nationally has increased (from 72 to 219 cases). The greatest increase was seen in the Auckland region (28 to 143 cases), followed by Canterbury (9 to 23 cases), and Waikato (5 to 10 cases) DHBs and the Wellington region 9 to 15 cases). Other places of diagnosis have remained more or less stable (Figure 56).

Figure 56. Infectious syphilis case numbers by place of diagnosis, 2011–2015



Note: Based on data from the enhanced syphilis surveillance in which case numbers were matched to clinic data from 2013. Auckland region = Waitemata, Auckland and Counties Manukau DHBs. Wellington region = Hutt Valley and Capital & Coast DHBs.

AGE

2015 analysis

The highest numbers of males with syphilis were reported in the 20–24 years (35 cases), 25–29 years (33 cases) and 30–34 years (32 cases) age groups. For females, syphilis case numbers were low and were spread across the age groups. The three transgender cases occurred in the 30–34 years (2 cases) and 35–39 years (1 case) age groups (Table 61).

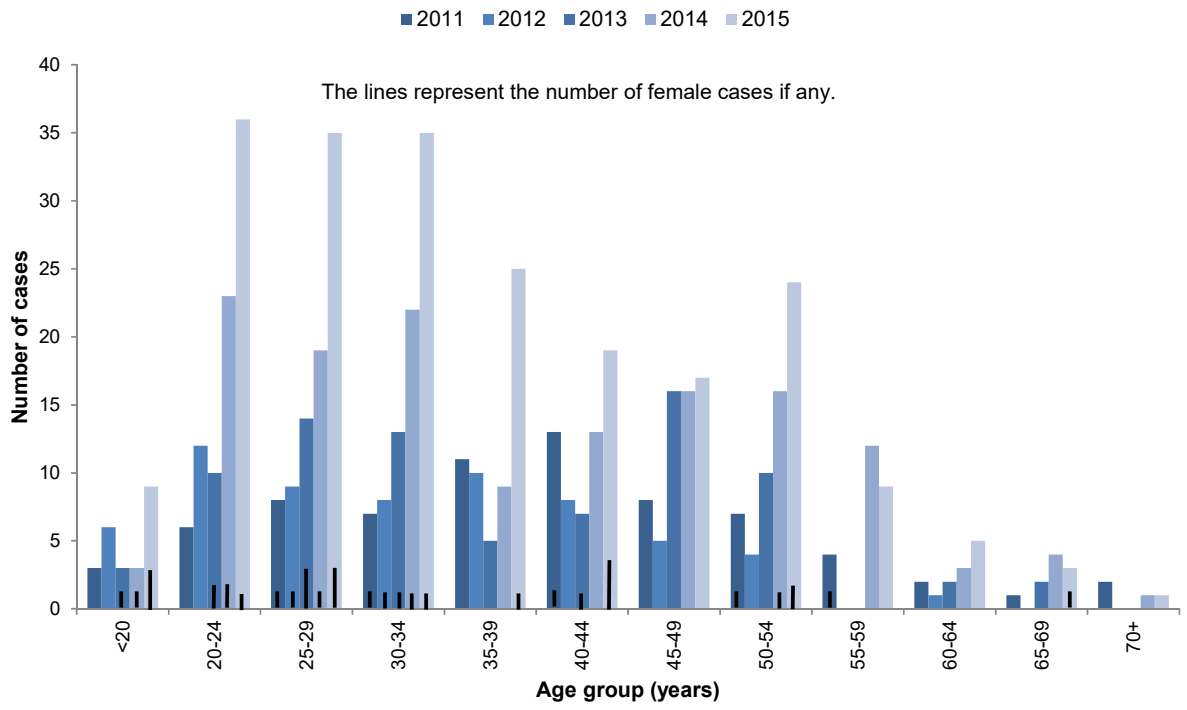
Table 61. Number of infectious syphilis cases by age group and sex, 2015

Age group (years)	Male	Female	Transgender	Total
<20	6	3	0	9
20–24	35	1	0	36
25–29	33	3	0	36
30–34	32	1	2	35
35–39	23	1	1	25
40–44	15	4	0	19
45–49	17	0	0	17
50–54	22	2	0	24
55–59	8	1	0	9
60–64	5	0	0	5
65–59	3	0	0	3
70+	1	0	0	1
Total	**200**	**16**	**3**	**219**

Trends

From 2011 to 2015 case numbers increased in almost all age groups. The largest increase over this period occurred in the 20–24 years age group (6 to 36 cases), followed by the 30–34 years (7 to 35 cases) and 25–29 years (8 to 36 cases) age groups. In the remaining age groups there were more moderate increases, or case numbers remained low (Figure 57).

Figure 57. Infectious syphilis case numbers by age group, 2011–2015



SEXUAL BEHAVIOUR

2015 analysis

Sexual behaviour for the 12 months prior to diagnosis was recorded for all but three cases. Of the male cases, 84.8% (167/197) were men who had sex with men (MSM), of whom 24 cases had sex with both men and women. These 24 cases are classified in the MSM group throughout this report.

Of the female cases, 87.5% (14/16) were heterosexual and 12.5% (2/16) were females who had sex with males and females (FSMF). Of the transgender cases, two were MSM, including one who also had sex with females. One transgender case was heterosexual (a female who had sex with males) (Table 62).

Table 62. Number of infectious syphilis cases by sexual behaviour and sex, 2015

Sexual behaviour[a]	Male	Female	Transgender	Total
Same sex partners only	143	0	1	144
Opposite sex partners only	30	14	1	45
Both opposite and same sex partners	24	2	1	27
Unknown	3	0	0	3
Total	**200**	**16**	**3**	**219**

[a] Sexual behaviour in the past 12 months.

Trends

From 2011 to 2015 sexual behaviour of cases has remained similar with the majority of cases reported as MSM and most female cases reported as heterosexual. In 2015, bisexual females and transgender cases were reported for the first time in the surveillance. Two male cases in 2012 and three male cases in 2015 were reported with unknown sexual behaviour, and therefore are not included in the analyses.

ETHNICITY

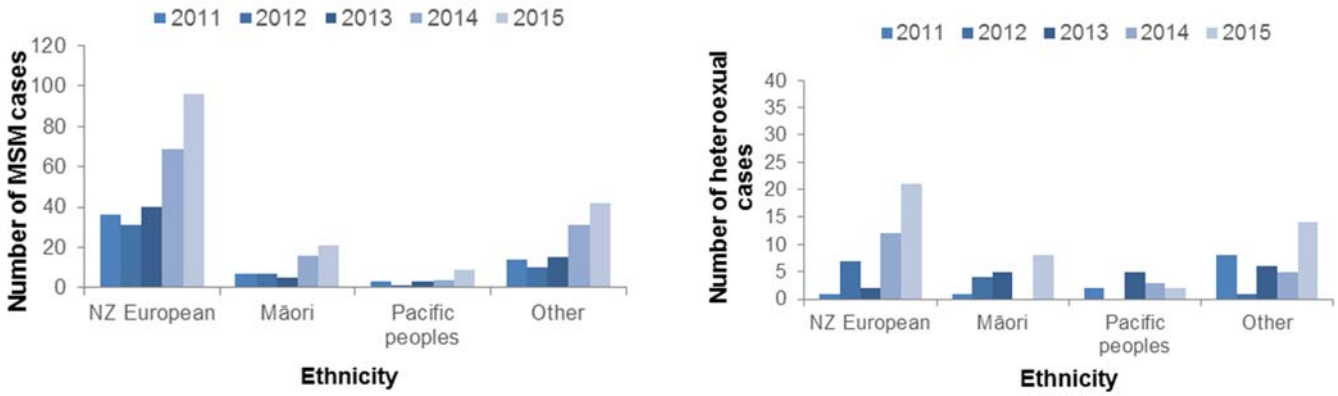
2015 analysis

Ethnicity information was recorded for all cases except for one MSM case. The main ethnic group reported in MSM cases was NZ European (57.1%), followed by Asian (13.1%), Māori (12.5%), Other (11.9%) and Pacific peoples (5.4%) ethnic groups. For heterosexual cases the main ethnic group reported was also NZ European (46.7%), followed by Other (20.0%), Māori (17.8%), Asian (11.1%) and Pacific peoples (4.4%) ethnic groups. The two FSMF cases were in NZ European and Māori ethnic groups (1 case each). In both MSM and heterosexual cases there was no pattern and a wide range that made up the Other ethnicities reported (Table 63).

Trends

The most commonly reported ethnic group for MSM cases remained NZ European from 2011 to 2015. In heterosexual cases there was no distinct pattern over the five years. Infectious syphilis cases by ethnicity and sexual behaviour are presented in Figure 58.

Figure 58. Infectious syphilis case numbers by ethnicity and sexual behaviour, 2011–2015



Note: The Asian ethnic group has been combined with the Other ethnic group for these graphs as in previous years it was not reported separately.
MSM cases include men who have sex with only men and also men who have sex with men and women.

COUNTRY OF INFECTION

2015 analysis

Information on country of infection was recorded for 95.4% (209/219) of cases. Most MSM (88.8%) and heterosexual (88.9%) cases as well as both FSMF cases were thought to be infected in New Zealand (Table 63).

Table 63. Number of infectious syphilis cases by sexual behaviour, ethnicity, country of infection and clinical setting of initial syphilis test, 2015

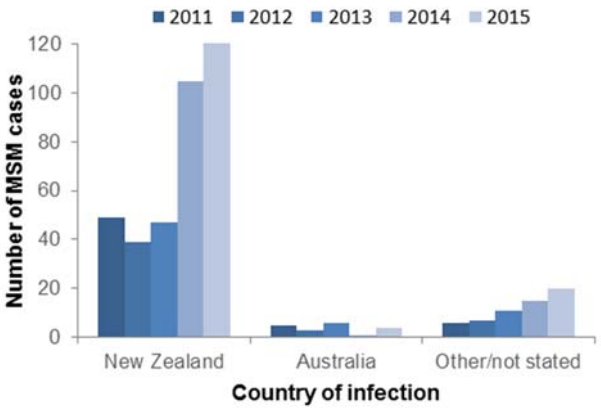
Ethnicity, country of infection and clinical setting	MSM	Heterosexual men and women	Heterosexual men	Heterosexual women	FSMF	Total[a]
Ethnicity						
Māori	**21***	**8**	4	4*	**1**	**30**
Pacific peoples	**9**	**2**	1	1	**0**	**11**
NZ European	**96**	**21**	14	7	**1**	**118**
Asian	**22**	**5**	4	1	**0**	**27**
Other[b]	**20**	**9**	7	2	**0**	**29**
Unknown	**1**	**0**	0	0	**0**	**1**
Country of infection[c]						
New Zealand	**150**	**40**	26	14	**2**	**192**
Australia	**4**	**0**	0	0	**0**	**4**
Other	**20**	**5**	4	1	**0**	**25**
Unknown	**0**	**0**	0	0	**0**	**0**
Clinical setting of initial syphilis test						
Sexual health clinic	**109****	**22**	18	4	**0**	**131**
General practice	**38**	**19**	9	10*	**2**	**59**
NZ AIDS Foundation testing clinic	**2**	**0**	0	0	**0**	**2**
Family planning clinic	**0**	**1**	1	0	**0**	**1**
Antenatal clinic	**0**	**1**	0	1	**0**	**1**
Infectious diseases clinic	**14**	**0**	0	0	**0**	**14**
Other	**6**	**2**	2	0	**0**	**8**
Total number of cases	**169****	**45***	**30**	**15***	**2**	**216**

[a] Total includes MSM, heterosexual men and women, and FSMF. Total excludes three male cases with unknown sexual behaviour.
[b] Other ethnicities included Afghani, Argentinian, Celtic, Eastern European, European (USA), European Other, French, Italian, Latin American, Latin American/Hispanic, Middle Eastern, Polish, Russian, Scottish and USA American.
[c] Some cases had more than one suggested country of infection.
*Includes one transgender case.
**Includes two transgender cases.
Note: MSM cases include men who have sex with only men and also men who have sex with men and women.

Trends

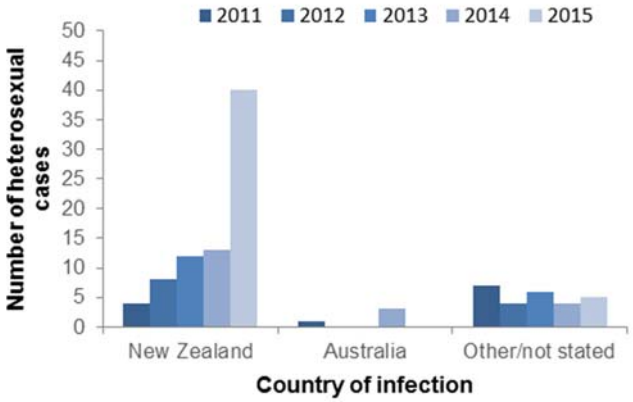
Despite the large increase in case numbers in 2014 and 2015, the most common country of infection for both MSM and heterosexual cases from 2011 to 2015 remained New Zealand. During the same period, Australia remained the next most common country of infection in MSM, but case numbers were low (Figure 59 and Figure 60).

Figure 59. MSM infectious syphilis case numbers by country of infection, 2011–2015



Note: Other countries of infection reported in 2015 were Argentina, China, England, France, Germany, Japan, Papua New Guinea, Singapore, South America (not further defined), Thailand and the United States of America. Three cases in 2015 reported more than one possible country, and eight cases had unknown country of infection.

Figure 60. Heterosexual infectious syphilis case numbers by country of infection, 2011–2015



Note: In 2015 the other country of infection was China for three cases, and two cases had unknown country of infection.

CLINICAL SETTING OF INITIAL SYPHILIS TEST

2015 analysis

The clinical setting for the initial syphilis test was recorded for all cases (Table 63). Initial testing of MSM cases was most commonly reported in SHCs (109 cases), followed by general practices (38 cases) and infectious disease clinics (14 cases). In heterosexual cases both males and females were more likely to have been tested in SHCs (18 cases and 4 cases, respectively) or general practice (9 and 10 cases, respectively). The site of initial syphilis test for the two FSMF cases was also general practice.

Trends

The clinical settings for initial tests have not changed notably over the five years of enhanced syphilis surveillance.

PRIMARY REASON FOR TESTING

2015 analysis

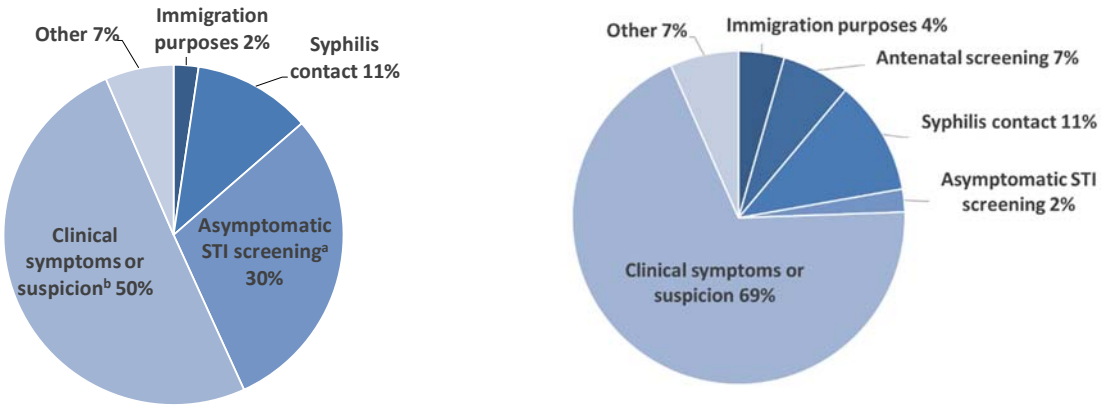
The primary reason for testing was recorded for all cases (Table 64). The most commonly reported reason for testing in MSM cases was clinical symptoms or suspicion (85 cases), followed by asymptomatic STI screening (50 cases) and syphilis contact (19 cases). In heterosexual men and

women and FSMF the most commonly reported reason for testing was clinical symptoms or suspicion (22 cases, 9 cases and 2 cases, respectively) (Figure 61).

Trends

The most commonly reported primary reason for testing in MSM cases remained clinical symptoms or suspicion between 2011 and 2015. This was also the most commonly reported primary reason for testing in heterosexual men. However, for heterosexual women there was no predominant trend in reason for testing during the same period. There was no change from 2014 to 2015 in the proportion of MSM cases where the primary reason for testing was reported as asymptomatic screening whereas there was a small increase in the proportion of heterosexual men and women (from 0.5% to 2%) where asymptomtic screening was reported as the primary reason for testing. However, the low number of cases reported in heterosexuals menas that this increase should be viewed with caution.

Figure 61. Primary reason for testing, 2015



[a] Includes one transgender case.
[b] Includes one transgender case.

SYMPTOMS

2015 analysis

Symptom information was recorded for all MSM cases, and 61.5% (104/169) reported symptoms. Eighty-two percent (37/45) of heterosexual cases reported symptoms, of which 11 were female. The most commonly reported symptoms in both MSM and heterosexual cases were genital ulceration (55 cases and 20 cases, respectively) and rash (48 cases and 21 cases, respectively) (Table 64).

Trends

The most commonly reported symptoms have continued to be genital ulceration, rash or lymphadenopathy since 2011. Two cases in 2014 and three cases in 2015 reported neurological symptoms, this had not been reported in the previous years. In both 2012 and 2013 all females were reported to be asymptomatic, but 50.0% (3/6) of female cases were symptomatic in 2014 and 72.2% (13/17) in 2015.

RAPID PLASMA REAGIN (RPR) TITRES

2015 analysis

RPR titre information was recorded for all but four cases (all MSM) (Table 64). The most commonly

reported titres were 1:32 or 1:64 in MSM (69 cases), heterosexual cases (25 cases) and FSMF (2 cases).

Trends

RPR titre information was available for all cases except for one each year from 2011 to 2014, and for four cases in 2015. The most commonly reported titres for MSM cases in 2011 were 1:128 or greater. From 2012 to 2015 the most commonly reported titres were 1:32 or 1:64. For details see Table 64.

Table 64. Number of infectious syphilis cases by sexual behaviour and primary reason for testing, symptoms, and RPR titres, 2015

Primary reason for testing, Symptoms and RPR titres	MSM[a]	Heterosexual men and women	Heterosexual men	Heterosexual women[b]	FSMF	Total[c]
Primary reason for testing						
Clinical symptoms or suspicion	**85**	**31**	22	9	**2**	**118**
Asymptomatic STI screening	**50**	**1**	1	0	**0**	**51**
Syphilis contact	**19**	**5**	3	2	**0**	**24**
Immigration purposes	**4**	**2**	1	1	**0**	**6**
Antenatal screening	**0**	**3**	0	3	**0**	**3**
Other	**11**	**3**	3	0	**0**	**14**
Symptoms	**104**	**37**	26	11	**2**	**143**
Genital ulceration	**55**	**20**	16	4	**1**	**76**
Rash	**48**	**21**	13	8	**2**	**71**
Lymphadenopathy	**16**	**7**	6	1	**0**	**23**
Neurological symptoms	**3**	**0**	0	0	**0**	**3**
Oral ulceration	**5**	**5**	2	3	**1**	**11**
Other	**13**	**5**	3	2	**0**	**18**
Unknown	**0**	**0**	0	0	**0**	**0**
No symptoms	**65**	**8**	4	4	**0**	**73**
RPR titres						
0	**12**	**2**	2	0	**0**	**14**
1:1, 1:2, 1:4	**27**	**7**	7	0	**0**	**34**
1:8, 1:16	**35**	**8**	3	5	**0**	**43**
1:32, 1:64	**70**	**25**	16	9	**2**	**97**
1:128, 1:256, 1:512	**21**	**3**	2	1	**0**	**24**
Unknown	**4**	**0**	0	0	**0**	**4**
Total number of cases	**169**	**45**	**30**	**15**	**2**	**216**

[a] Includes two transgender cases.
[b] Includes one transgender case.
[c] Total includes MSM, heterosexual men and women, and FSMF. Total excludes three male cases with unknown sexual behaviour.

Note: MSM cases include men who have sex with only men and also men who have sex with men and women

CONCURRENT STI DIAGNOSES

2015 analysis

Fifty (29.6%) MSM cases had a concurrent STI diagnosis, including 13 cases that had two concurrent STI diagnoses. Concurrent STIs included chlamydia (30 cases), gonorrhoea (19 cases), genital warts and other STIs (6 cases each) and genital herpes (2 cases). Four (8.9%) heterosexual cases had a concurrent chlamydia diagnosis, of which one also had another STI. One of the two FSMF cases had a concurrent diagnosis of trichomoniasis (Table 66).

Trends

Since 2011 the most commonly reported concurrent STI diagnosis in MSM cases has continued to be chlamydia. Heterosexual cases also reported having chlamydia as a concurrent STI diagnosis but only in very small numbers in both 2012 (3 cases) and 2013 (1 case).

HIV SEROSTATUS

2015 analysis

HIV serostatus was recorded for all cases except four. Forty-six (27.2%) MSM cases were HIV seropositive. All heterosexual cases and both FSMF cases were HIV seronegative (Table 66).

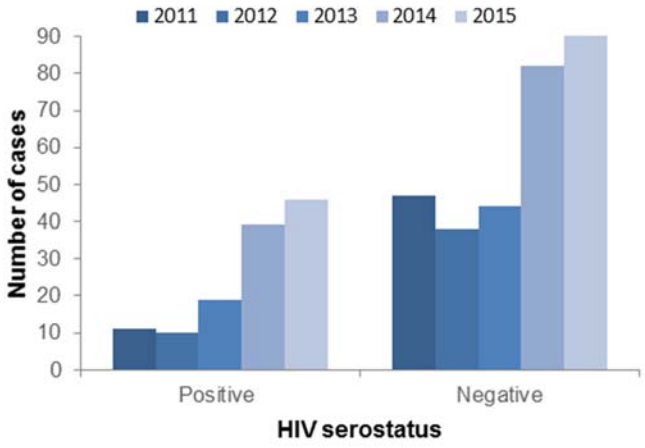
Trends

HIV seropositivity for MSM cases steadily rose from 19.0% to 32.2% between 2011 and 2014, and decreased slightly in 2015 to 27.5% (Table 65). Infectious syphilis case numbers by HIV serostatus in MSM are presented in Figure 62 and this shows that the number of seropositive cases for MSM increased fourfold from 2011 to 2015 (11 and 46 cases respectively) and the increase continued between 2014 and 2015. Two heterosexual cases (both male) reported HIV seropositivity in 2012 and 2014.

Table 65. HIV seropositivity in MSM infectious syphilis cases, 2011–2015

Year	2011	2012	2013	2014	2015
% HIV positive	19.0	20.8	30.2	32.2	27.5

Figure 62. MSM infectious syphilis case numbers by HIV serostatus, 2011–2015



Note: MSM cases include men who have sex with only men and also men who have sex with men and women

Table 66. Number of infectious syphilis cases by sexual behaviour and concurrent STIs and HIV serostatus, 2015

Concurrent bacterial STIs and HIV serostatus	MSM[a]	Heterosexual men and women	Heterosexual men	Heterosexual women[b]	FSMF	Total[c]
Concurrent bacterial STIs[d]						
Chlamydia	**30**	**4**	2	2	**0**	**34**
Gonorrhoea	**19**	**0**	0	0	**0**	**19**
Genital warts	**6**	**0**	0	0	**0**	**6**
Trichomoniasis	**0**	**0**	0	0	**1**	**1**
Genital herpes	**2**	**0**	0	0	**0**	**2**
Other	**6**	**1**	0	1	**0**	**7**
HIV serostatus						
Positive	**46**	**0**	0	0	**0**	**46**
Negative	**121**	**43**	29	14	**2**	**166**
Unknown	**2**	**2**	1	1	**0**	**4**
Total number of cases	**169**	**45**	**30**	**15**	**2**	**216**

[a] Includes two transgender cases. MSM cases include men who have sex with only men and also men who have sex with men and women.
[b] Includes one transgender case.
[c] Total includes MSM, heterosexual men and women, and FSMF. Total excludes three male cases with unknown sexual behaviour.
[d] Some cases reported more than one concurrent bacterial STI.

SEXUAL ACTIVITY

2015 analysis

None of the female cases reported having same sex partners in the three months prior to diagnosis, but two cases (FSMF) reported having same sex partners in the previous 12 months. For MSM the number of same sex partners in the past three months was recorded for 91.1% (154/169) of cases. The majority (64.9%) of MSM cases had two or more sexual partners in the three months prior to diagnosis (Table 67).

The number of opposite sex partners in the three months prior to diagnosis was recorded for all cases except five (Table 67). Eighteen (10.7%) MSM cases reported having opposite sex partners in the previous three months, of these 10 reported one partner only. Twenty-three (51.1%) heterosexual cases reported having only one opposite sex partner in the previous three months.

Of the cases for which information was recorded (209/214) four cases were recorded as being sex workers (all MSM). One MSM case reported acquiring the infection through a male sex worker, and one FSMF case through a female sex worker. Four heterosexual men reported acquiring the infection through female sex workers (Table 67).

Trends

Between 2011 and 2015 the most commonly reported number of same sex partners in the three months prior to diagnosis in MSM cases has remained 2–4 partners. In heterosexual cases the most commonly reported number of opposite sex partners in the three months prior to diagnosis has remained one partner.

Before 2013 no cases were recorded as being sex workers. One MSM case was reported as acquiring infectious syphilis via a transgender sex worker in 2011. Heterosexual cases were reported as acquiring infectious syphilis via female sex workers in 2012 (1 case), 2013 (2 cases), 2014 (1 case) and 2015 (4 cases).

Table 67. Number of infectious syphilis cases by sexual behaviour and sexual activity and sex work, 2015

Sexual activity and Sex work	MSM[a]	Heterosexual men and women	Heterosexual men	Heterosexual women[b]	FSMF	Total[c]
Number of same sex partners in past 3 months						
0	**9**	**-**	-	-	**0**	**9**
1	**45**	**-**	-	-	**0**	**45**
2–4	**60**	**-**	-	-	**0**	**60**
5–9	**22**	**-**	-	-	**0**	**22**
10–15	**10**	**-**	-	-	**0**	**10**
16 or more	**8**	**-**	-	-	**0**	**8**
Unknown	**15**	**-**	-	-	**0**	**15**
Number of opposite sex partners in past 3 months						
0	**147**	**4**	2	2	**0**	**151**
1	**10**	**23**	14	9	**1**	**34**
2–4	**5**	**17**	14	3	**1**	**23**
5–9	**1**	**0**	0	0	**0**	**1**
10 or more	**2**	**0**	0	0	**0**	**2**
Unknown	**4**	**1**	0	1	**0**	**5**
Sex work						
Patient was a sex worker						
Yes	**4**	**0**	0	0	**0**	**4**
No	**162**	**43**	28	15	**2**	**207**
Unknown	**3**	**2**	2	0	**0**	**5**
Acquired through sex worker						
Yes	**1**	**4**	4	0	**1**	**6**
No	**148**	**33**	21	12	**1**	**182**
Unknown	**20**	**8**	5	3	**0**	**28**
Gender of sex worker						
Male	**1**	**0**	0	0	**0**	**1**
Female	**0**	**4**	4	0	**1**	**5**
Total number of cases	**169**	**45**	**30**	**15**	**2**	**216**

[a] Includes two transgender cases. MSM cases include men who have sex with only men and also men who have sex with men and women.
[b] Includes one transgender case.
[c] Total includes MSM, heterosexual men and women, and FSMF. Total excludes three male cases with unknown sexual behaviour.

CONTEXT LEADING TO INFECTION

2015 analysis

The context leading to infection was reported for 88/219 cases (40.2%), some of which reported more than one context. The most commonly reported contexts in MSM cases were Internet-based GPS mobile device apps (39 cases), Internet dating (22 cases) and Sex-on-site venue (15 cases). Information for heterosexual cases was only recorded for eight cases (17.8%). Further detail is in Table 68.

Trends

The most commonly reported contexts leading to infection in MSM cases remained the Internet and Sex-on-site venues between 2011 and 2015. Compared to previous years, in 2015 there was a notable increase in cases reporting Internet-based GPS mobile device as the context leading to infection. For the majority of heterosexual cases information on context was not provided.

Table 68. Number of infectious syphilis cases by sexual behaviour and context leading to infection, 2015

Context leading to infection[a]	MSM[b]	Heterosexual men and women	Heterosexual men	Heterosexual women[c]	FSMF	Total[d]
Sex-on-site venue	**15**	**0**	0	0	**0**	**15**
Internet-based GPS mobile device app	**39**	**1**	1	0	**0**	**40**
Internet dating	**22**	**1**	0	1	**0**	**23**
Bar	**9**	**1**	1	0	**0**	**10**
Beat	**2**	**0**	0	0	**0**	**2**
Other	**13**	**5**	5	0	**0**	**18**
Not stated	**94**	**37**	**23**	**14**	**2**	**133**

[a] Some cases reported more than one context leading to infection.
[b] Includes two transgender cases. MSM cases include men who have sex with only men and also men who have sex with men and women.
[c] Includes one transgender case.
[d] Total includes MSM, heterosexual men and women, and FSMF. Total excludes three male cases with unknown sexual behaviour.

OTHER STIs

NON-SPECIFIC URETHRITIS

Non-specific urethritis (NSU) 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.

LYMPHOGRANULOMA VENEREUM

Lymphogranuloma venereum (LGV) is a bacterial STI caused by *Chlamydia trachomatis.* It is caused by different serovars (L1, L2 and L3) than those that cause chlamydial urogenital infections. LGV is endemic in developing countries and in New Zealand, as in most developed countries, infection is uncommon and usually acquired outside of the country. There have been recent outbreaks of infection amongst men who have sex with men (MSM) overseas as well as cases reported in MSM in New Zealand [25] [26].

CHANCROID

Chancroid is a bacterial STI caused by Haemophilus ducreyi. It is rare in New Zealand and cases are most probably related to foreign travel. It remains common in many countries in Africa, the Caribbean basin and Southwest Asia. It is more commonly seen in heterosexual men than in women, particularly in uncircumcised males [27].

GRANULOMA INGUINALE

Granuloma inguinale (GI) is a bacterial STI caused by the Calymmatobacterium or Klebsiella granulomatis. Also known as Donovanosis the infection is most commonly found in tropical or subtropical areas of the world (such as Papua New Guinea, central Australia, Southern India and the Caribbean). It is rare in New Zealand and cases are most probably related to foreign travel [28].

KEY FINDINGS: 2015

- 751 cases of NSU were reported in 2015, the majority in SHCs (725 cases)
- 28.6% of cases in SHCs were aged <25 years, and the mean age was 32.1 years
- The number of NSU cases reported in both clinic types increased between 2011 to 2015, with an 18.9% increase in cases seen in SHCs
- Two cases of LGV were reported in SHCs, both male, and aged 59 and 65 years respectively

COMMENTARY

There is an increasing national trend in NSU cases driven by increasing case numbers in Auckland and Wellington regions and Canterbury DHB, the same regions with the highest numbers of infectious syphilis cases. The increasing trend is seen in all age groups above 20 years but is limited to the European and Other ethnic groups. While this may reflect differing incidence patterns in these ethnic groups it may also be related to differences in access to health services.

Both new LGV cases reported in 2015 were in males, as were the four LGV cases reported in 2013 and 2014, and all six cases reported European or Other ethnicity.

CLINIC SURVEILLANCE OF NON-SPECIFIC URETHRITIS

NATIONAL ANALYSIS

NSU case numbers for 2015 (Table 69) decreased in SHCs by 1.2% and increased in FPCs by 23.8% compared with 2014. From 2011 to 2015, NSU case counts increased by 18.9% in SHCs, and case counts in FPCs have increased over the five-year period but have remained low (Figure 63).

Table 69. NSU case numbers by clinic type, 2015

Clinic type	Total number of cases
SHC	725
FPC	26
Total	**751**

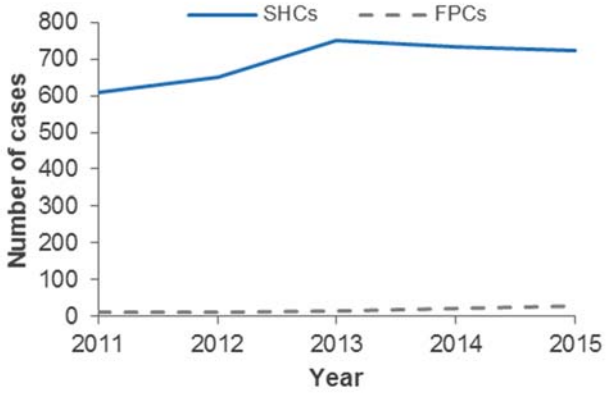
DHB COUNTS

Table 70. NSU case numbers in SHCs by DHB, 2015

DHB	Cases
Northland	0
Auckland region[a]	336
Waikato	52
Lakes	4
Bay of Plenty	56
Tairawhiti[b]	-
Taranaki	13
Hawke's Bay	2
Whanganui	0
MidCentral	10
Wellington region[c]	122
Nelson Marlborough	20
West Coast	1
Canterbury	101
South Canterbury	0
Southern	8

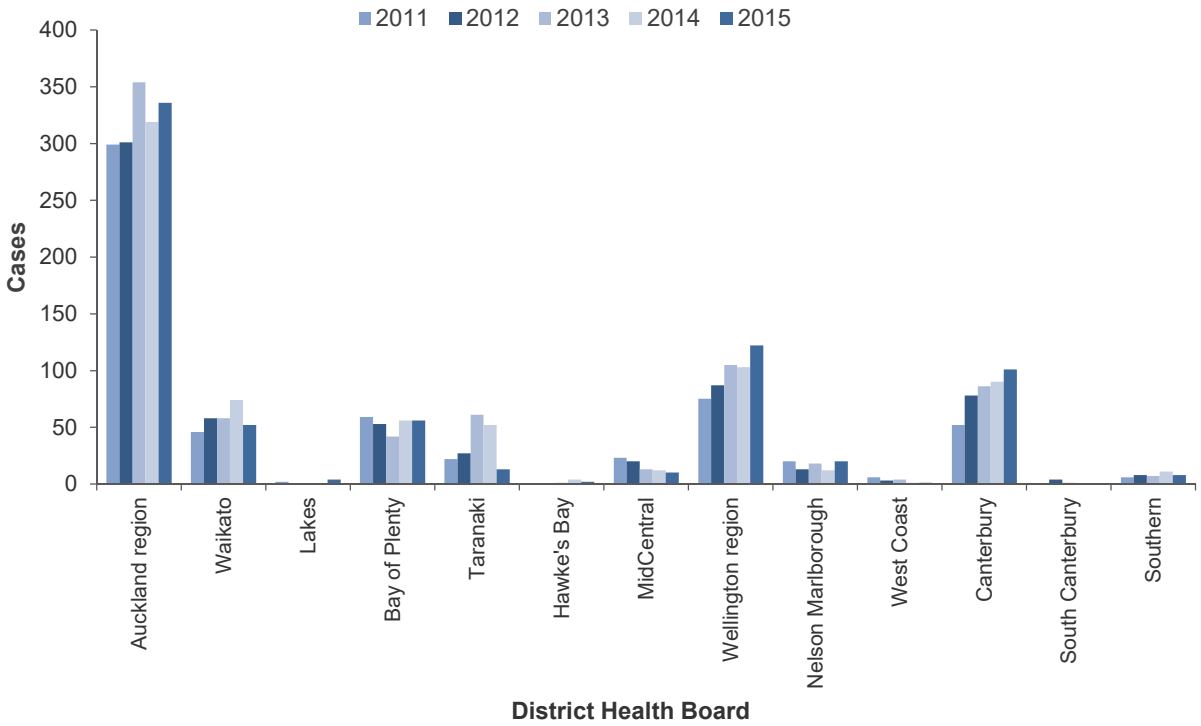
[a] Waitemata, Auckland and Counties Manukau DHBs.
[b] SHC data not available for Tairawhiti DHB.
[c] Hutt Valley and Capital & Coast DHBs.

Figure 63. NSU cases by clinic type, 2011–2015



Variations in trends of case numbers reported to SHCs by DHB were seen from 2011 to 2015 in Auckland and Wellington regions and Canterbury DHB (all having large urban centres) showing an increasing trends (Figure 64).

Figure 64. NSU cases reported by SHCs by DHB, 2011–2015



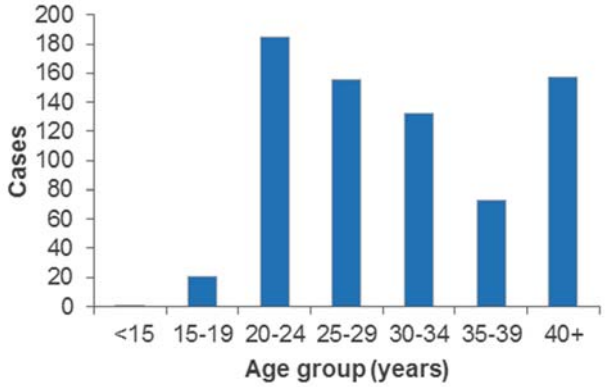
Note: Auckland region is comprised of Waitemata, Counties Manukau and Auckland DHBs. Wellington region is comprised of Hutt Valley and Capital & Coast DHBs. No NSU cases were reported in Northland and Whanganui DHBs over the five year period. SHC data not available for Tairawhiti DHB.

AGE AND ETHNICITY DISTRIBUTION OF NSU

2015 analysis

Age was recorded for all NSU cases in 2015. In SHCs, 28.6% of the reported cases were aged less than 25 years (Figure 65). The proportion was larger in FPCs (57.7%).

Figure 65. NSU case numbers reported by SHCs by age group, 2015



In SHCs, ethnicity was recorded for 95.4% of the reported cases of NSU. The highest percentage of cases were of European ethnicity (66.5%), followed by Other (15.9%) (Table 71).

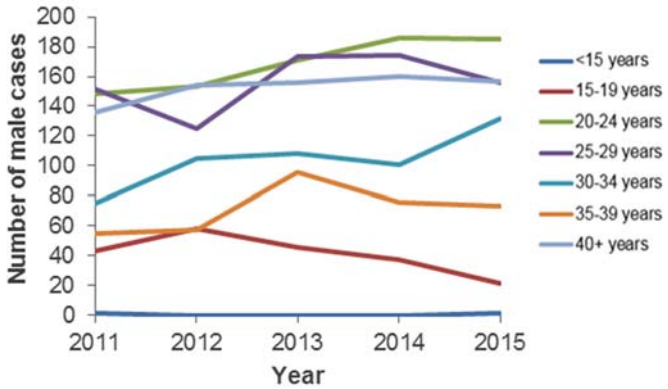
Table 71. NSU cases numbers by ethnicity and clinic type, 2015

Ethnicity	Clinic type	
	SHC	FPC
European	460	18
Māori	79	2
Pacific peoples	43	1
Other	110	3
Unknown	33	2
Total	**725**	**26**

Trends in age and ethnicity

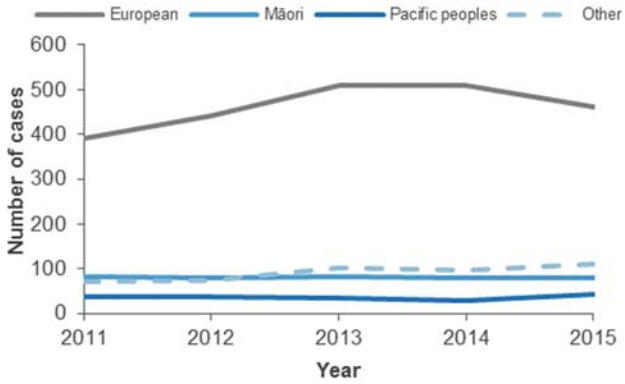
Between 2011 and 2015, case numbers reported by SHCs increased in all age groups except the 15–19 years age group. Case numbers were very low in the less than 15 years age group (Figure 66).

Figure 66. Number of NSU cases in SHCs in males by age group, 2011–2015



From 2011 to 2015 case numbers increased in the European and Other ethnic groups (Figure 67) but remained stable in the Māori and Pacific peoples ethnic groups.

Figure 67. Number of NSU cases reported from SHCs, by ethnicity, 2011–2015



CLINIC SURVEILLANCE OF LYMPHOGRANULOMA VENEREUM, CHANCROID AND GRANULOMA INGUINALE

NATIONAL ANALYSIS

2015 analysis

Two cases of lymphogranuloma venereum (LGV) and no cases of chancroid or granuloma inguinale (GI) were reported in 2015. The LGV cases were reported by SHCs in the Auckland and Wellington regions. The cases were both male, aged 59 and 65 years, and of European ethnicity.

Trend analysis

Between 2011 and 2015, six cases of LGV and no cases of chancroid or GI were reported by SHCs. In 2013 three cases of LGV were reported from SHCs, all of which were in the Auckland region, in males aged over 40 years, of European (1 case) and Other (2 cases) ethnicity. In 2014 one case of LGV was reported by a SHC in Waikato DHB, in a male 25 years of age and of European ethnicity. In 2015 two cases of LGV were reported as detailed above.

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APPENDICES

APPENDIX A: CLINIC VISITS

Sexual health clinics

SHCs reported 82,040 clinic visits during 2015, 57.2% (46,913 visits) of which were by females. Between 2014 and 2015, the number of clinic visits increased by 2.6% (from 80,000 to 82,040 visits).

Where information for age and ethnicity was provided, 40.3% (33,091 visits) were by attendees aged less than 25 years, 59.6% (48,030 visits) were European, 22.8% (18,369 visits) were Māori, 13.2% (10,610 visits) were Other and 4.4% (3578 visits) were Pacific peoples ethnicity.

Family planning clinics

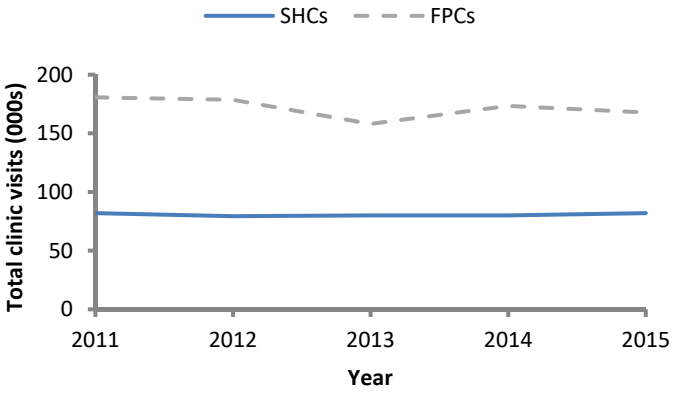
FPCs reported 167,714 clinic visits during 2015, 95.3% (159,854 visits) of which were by females. Between 2014 and 2015, the number of clinic visits decreased by 3.2% (from 173,323 to 167,714 visits).

Where information for age and ethnicity was provided, 58.3% (97,723 visits) were by attendees aged less than 25 years, 68.5% (111,313 visits) were European, 15.8% (25,714 visits) were Māori, 10.5% (17,089 visits) were Other and 5.1% (8343 visits) were Pacific peoples ethnicity.

Trends in clinic visits

Over the five- year period between 2011 and 2015 the annual numbers of clinic visits in SHCs and FPCs were stable (Figure 68).

Figure 68. Total clinic visits by clinic type, 2011–2015



APPENDIX B: STI SURVEILLANCE CASE DEFINITIONS

Chlamydia	Confirmed	Laboratory isolation or detection of *Chlamydia trachomatis* in a clinical specimen. Cases should be classified as: 1. uncomplicated infection of the lower anogenital tract – this includes urogenital and anorectal infection 2. pelvic inflammatory disease or epididymitis 3. infection of another site (eg, eye or pharynx).
	Probable	Cases must be <u>all</u> of the following: • symptomatic **and** • a contact of a confirmed case **and** • non–laboratory confirmed (test negative or test not done).
Gonorrhoea	Confirmed	Laboratory isolation or detection of *Neisseria gonorrhoeae* from a clinical specimen. Cases should be classified as: 1. uncomplicated infection of one or both of the following: a. urogenital tract b. anorectal area (proctitis) 2. pelvic inflammatory disease or epididymitis 3. extra–genital infection of one or both of the following: a. pharynx b. other site not listed.
	Probable	Cases must be <u>all</u> of the following: • symptomatic **and** • a contact of a confirmed case **and** • non–laboratory confirmed (test negative or test not done).
Anogenital herpes	First diagnosis for the person at your clinic, with either 1. laboratory detection of herpes simplex virus from a clinical specimen **or** 2. a clinically compatible illness in the lower anogenital and buttock area (syphilis should be considered as a cause of genital ulceration).	
Anogenital warts	First diagnosis for the person at your clinic, with <u>visible</u>* typical lesion(s) on internal or external genitalia, perineum, or perianal region. * Do not include persons for whom there is <u>only</u> demonstration of human papillomavirus on cervical cytology or other laboratory method.	
Syphilis	Primary and secondary syphilis cases: case must have presented with compatible clinical symptoms and signs such as genital ulceration or rash confirmed on examination and/or mucocutaneous lesions containing *Treponema pallidum* confirmed by direct fluorescent antibodies (DFA) or polymerase chain reaction (PCR) plus reactive serological tests for syphilis.	
	Early latent syphilis cases: case must have reactive serological tests for syphilis, no clinical symptoms or signs of syphilis plus one of the following: • a clear history of primary or secondary syphilis symptoms within the previous 2 years or • sexual contact with a confirmed case of infectious syphilis within the previous 2 years or • a documented four-fold or greater rise in RPR titre if history of previous treated syphilis or • documented seroconversion to reactive treponemal serology as defined above within the previous 2 years.	
	Unknown duration: case must reactive syphilis serology, no clinical signs or symptoms of syphilis, no previously documented syphilis serology and a rapid plasma reagin (RPR) titre greater than 1:16.	
	Early congenital syphilis as diagnosed or confirmed by a paediatrician or venereologist.	
Non–specific urethritis (males only)	Urethral discharge in a sexually active male with laboratory exclusion of gonorrhoea and chlamydia, who does not meet the definition of a probable case of gonorrhoea or chlamydia.	
Chancroid	Confirmed	Isolation of *Haemophilus ducreyi* from a clinical specimen.
	Probable	Typical 'shoal of fish' pattern on gram stain of a clinical specimen, where syphilis, granuloma inguinale and anogenital herpes have been excluded **or** a clinically compatible illness in a patient who is a contact of a confirmed case.
Granuloma inguinale (GI)	Confirmed	Demonstration of intracytoplasmic Donovan bodies on Wright or Giemsa stained smears or biopsies of clinical specimens.
	Probable	A clinically compatible illness in a patient who is a contact of a confirmed case.
Lymphogranuloma venereum (LGV)	Confirmed	Laboratory detection of *Chlamydia trachomatis* serotype L_1, L_2 or L_3 from a clinical specimen.
	Probable	A clinically compatible illness with complement fixation titre of > 64 and other causes of ulcerations excluded **or** a clinically compatible illness in a person who is a contact of a confirmed case.

APPENDIX C: LIST OF PARTICIPATING LABORATORIES

In 2015 STI surveillance data was received from the following laboratories:

- Northland Pathology Laboratory, Northland
- Kaitaia Hospital Laboratory, Northland
- Bay of Islands Hospital Laboratory, Northland
- Whangarei Hospital Laboratory, Northland
- Dargaville Hospital Laboratory, Northland
- North Shore Hospital Laboratory, Waitemata
- LabPLUS, Auckland
- Labtests, Auckland
- Middlemore Hospital Laboratory, Counties Manukau
- Medlab Hamilton, Waikato
- Pathlab Waikato, Waikato
- Waikato Hospital Laboratory, Waikato
- Thames Hospital, Waikato
- Tokoroa Hospital, Waikato
- Te Kuiti Hospital, Waikato
- Taumarunui Hospital, Waikato
- Laboratory Services Rotorua, Lakes
- Taupo Southern Community Laboratory, Lakes
- Pathlab Bay of Plenty, Bay of Plenty
- Whakatane Hospital Laboratory, Bay of Plenty
- Gisborne Hospital, Tairawhiti
- Taranaki MedLab, Taranaki
- Taranaki Base Hospital, Taranaki
- Hawke's Bay Hospital, Hawke's Bay
- Hawke's Bay Southern Community Laboratory, Hawke's Bay
- Medlab Whanganui, Whanganui
- Medlab Central, MidCentral
- Medlab Wairarapa, Wairarapa
- Hutt Hospital Laboratory, Hutt Valley
- Aotea Pathology, Capital & Coast
- Nelson Southern Community Laboratory, Nelson Marlborough
- Marlborough Southern Community Laboratory, Nelson Marlborough
- Grey Hospital Laboratory, West Coast
- Canterbury Health Laboratories, Canterbury
- Christchurch Southern Community Laboratory, Canterbury
- Timaru Southern Community Laboratory, South Canterbury
- Oamaru Southern Community Laboratory, Southern
- Dunstan Southern Community Laboratory, Southern
- Otago Southern Community Laboratory, Southern
- Balclutha Southern Community Laboratory, Southern
- Queenstown Southern Community Laboratory, Southern
- Invercargill Southern Community Laboratory, Southern

APPENDIX D: MAPS OF STI LABORATORY SURVEILLANCE COVERAGE FOR CHLAMYDIA AND GONORRHOEA, 2011–2015

Figure 69. Laboratory surveillance coverage for chlamydia by DHB, 2011–2015

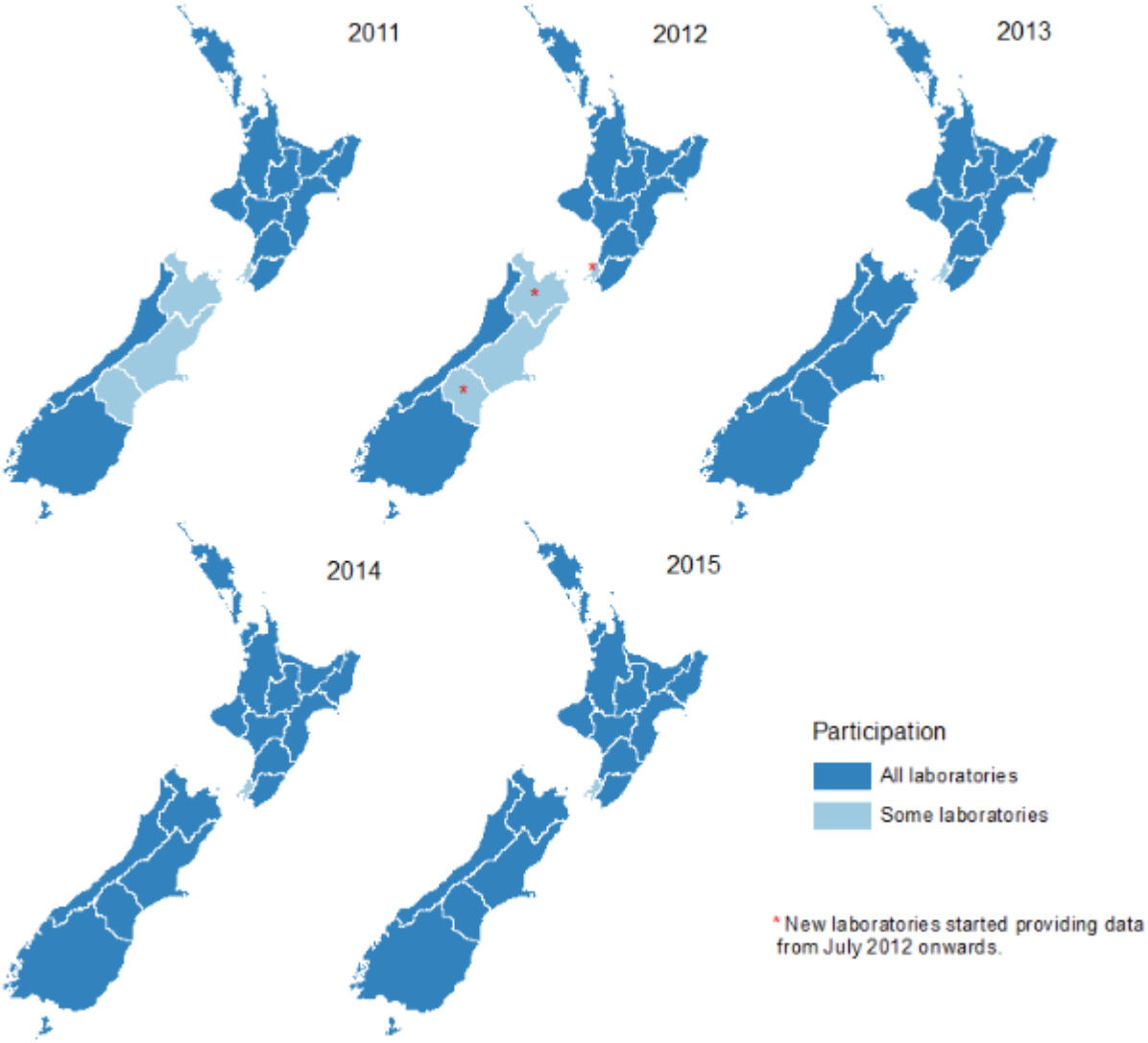
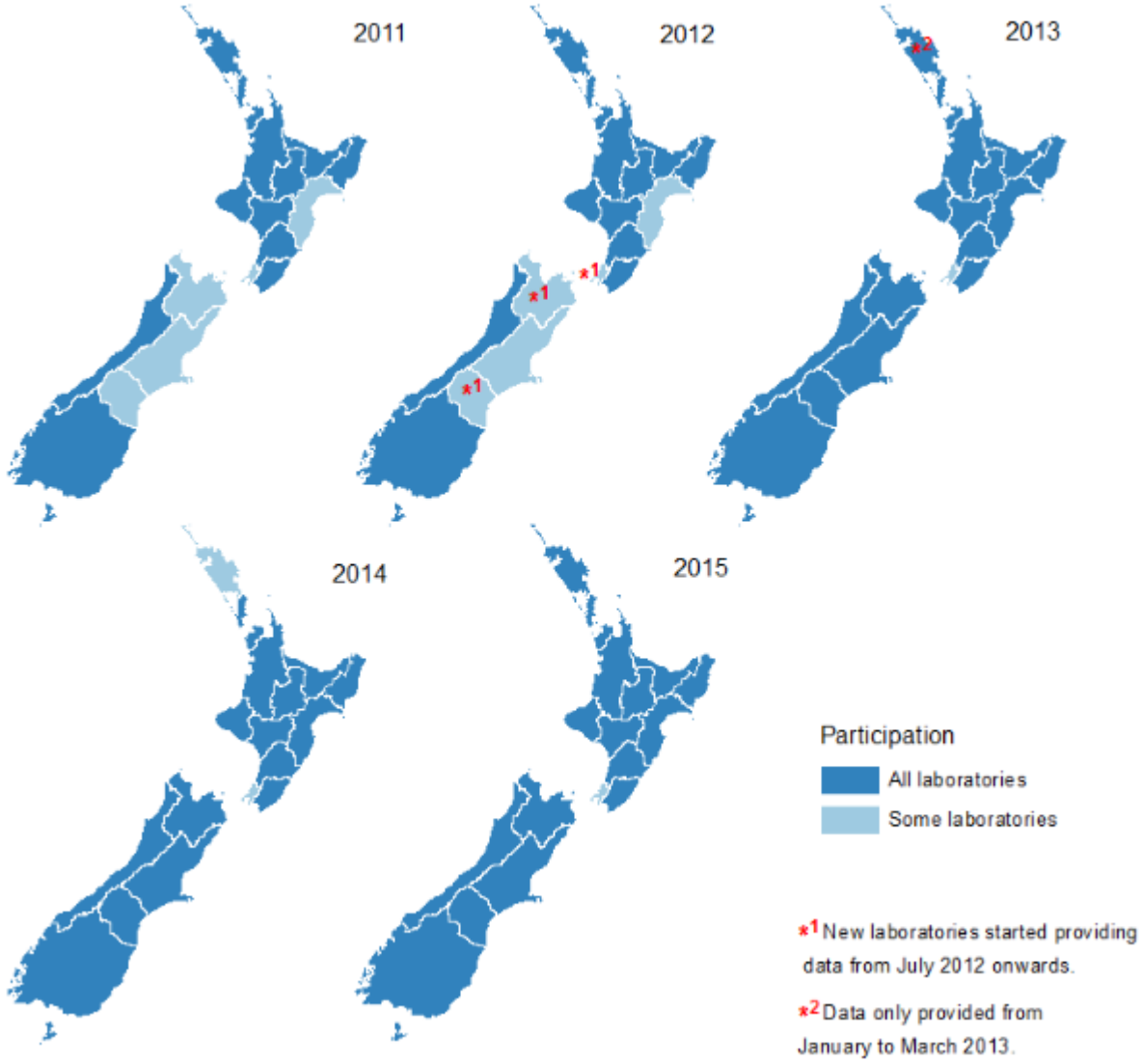


Figure 70. Laboratory surveillance coverage for gonorrhoea by DHB, 2011–2015



APPENDIX E: ENHANCED SYPHILIS SURVEILLANCE QUESTIONNAIRE 2013

Enhanced Syphilis Surveillance Form - August 2013 Clinic patient ID:.....

ENHANCED SYPHILIS SURVEILLANCE FORM

NAME OF CLINICIAN: .....

CITY OR TOWN OF CLINIC: .....

1. SITE OF INITIAL SYPHILIS TESTING

- ☐ Public Sexual Health Clinic
- ☐ General Practice
- ☐ Antenatal Clinic
- ☐ Body Positive Testing Clinic
- ☐ Other (please specify.....)
- ☐ Family Planning Clinic
- ☐ Student Health Clinic
- ☐ NZ AIDS Foundation Testing Clinic
- ☐ Infectious Diseases Clinic

2. PATIENT ID CODE Please complete the box with the first 2 letters of the surname (do not include the letters 'Mac', 'Mc', 'van der' if the surname starts with these), the first initial of given name, sex, and date of birth.

1st letter surname	2nd letter surname	1st letter first name	Sex	Day		Month		Year	

3. GENDER

☐ Male ☐ Female ☐ Transgender

4. ETHNICITY (self-identified - may tick more than one box)

- ☐ NZ European
- ☐ Maori
- ☐ Niuean
- ☐ Tongan
- ☐ Samoan
- ☐ Cook Island Maori
- ☐ Chinese
- ☐ Indian
- ☐ Other (please specify).....

5. COUNTRY OF BIRTH .....

6. CITY OR TOWN OF RESIDENCE .....

7. WHERE WAS THE INFECTION MOST LIKELY ACQUIRED?

- ☐ New Zealand (city/town if known.....)
- ☐ Overseas (country if known.....)
- ☐ Not known

8. DATE PATIENT PRESENTED ..... (Day)/ ..... (Month)/..... (Year)

9. PRIMARY REASON FOR TESTING FOR SYPHILIS

- ☐ Immigration purposes
- ☐ Antenatal Screening
- ☐ Other (please specify.....)
- ☐ Syphilis Contact
- ☐ Asymptomatic STI screening
- ☐ Clinical symptoms or suspicion

10. IF SYMPTOMATIC (TICK ALL THAT APPLY)

- ☐ Genital ulceration
- ☐ Lymphadenopathy
- ☐ Other (Please specify.....)
- ☐ Oral ulceration
- ☐ Rash
- ☐ Neurological symptoms

11. HIGHEST RPR/VDRL TITRE BEFORE TREATMENT

..... ☐ RPR ☐ VDRL ☐ Not tested ☐ Unknown

12. ON WHAT BASIS DO YOU CONSIDER THIS PERSON TO HAVE INFECTIOUS SYPHILIS? (TICK ALL THAT APPLY)

☐ Clinical grounds ☐ RPR/VDRL titre

1

Please describe why you think this person has infectious syphilis:

13. HIV SEROSTATUS AT TIME of syphilis diagnosis

☐ Negative ☐ Positive Date of diagnosis (if applicable) ..../ ..../.....
☐ Unknown

14. OTHER CONCURRENT STI DIAGNOSIS(ES) AT TIME of syphilis diagnosis (Tick all that apply)

☐ Chlamydia ☐ Gonorrhoea ☐ Trichomoniasis ☐ Genital Herpes
☐ Genital warts ☐ Other (please identify).....

15. LAST NEGATIVE TEST FOR SYPHILIS

☐ Tested Date ..../..../.....
☐ Tested date unknown
☐ Never tested before

16. SEXUAL BEHAVIOUR PREVIOUS 12 MONTHS

☐ Opposite sex partners only ☐ Same sex partners only
☐ Both opposite and same sex partners ☐ Unknown

17. NUMBER OF SEX PARTNERS IN THE PAST 3 MONTHS (Best estimate if unknown)

..... Male ☐ Exact ☐ Approximate
..... Female ☐ Exact ☐ Approximate

18. NUMBER OF SEX PARTNERS IN THE PAST 12 MONTHS (Best estimate if unknown)

..... Male ☐ Exact ☐ Approximate
..... Female ☐ Exact ☐ Approximate

19. PATIENT IS A SEX WORKER

☐ Yes ☐ No ☐ Unknown

20. LIKELY ACQUIRED SYPHILIS THROUGH CONTACT WITH SEX WORKER

☐ Yes ☐ No ☐ Unknown

If "Yes" gender of SW

☐ Female ☐ Male ☐ Transgender

21. ANY SOCIAL/SEXUAL NETWORK IMPLICATED?

☐ "Sex on Site" venue (sauna, club)
☐ Internet-based GPS mobile device App (e.g. Grindr App)
☐ Internet-dating eg NZDating, Find Someone
☐ "Beat" (public toilet, park etc.)
☐ Bar
☐ Other.....

Any other relevant comments:

Please return by email, mail or fax to Ali Borman:
Ali.Borman@esr.cri.nz
Health Intelligence Team, ESR, PO Box 50-348, Porirua 5240.
Fax: 04 978 6690

2

APPENDIX F: ENHANCED SYPHILIS SURVEILLANCE QUESTIONNAIRE 2011

ENHANCED SYPHILIS SURVEILLANCE FORM

NAME OF CLINICIAN: .....

1. SITE OF INITIAL SYPHILIS TESTING

☐ Public Sexual Health Clinic
☐ General Practice
☐ Antenatal Clinic
☐ Family Planning Clinic
☐ Student Health Clinic
☐ Other (please specify.....)

2. PATIENT ID CODE Please complete the box with the first 2 letters of the surname (do not include the letters 'Mac', 'Mc', 'van der' if the surname starts with these), the first initial of given name, sex, and date of birth.

1st letter surname	2nd letter surname	1st letter first name	Sex	Day		Month		Year	

3. GENDER

☐ Male ☐ Female ☐ Transgender

4. ETHNICITY (self-identified - may tick more than one box)

☐ NZ European
☐ Maori
☐ Samoan
☐ Tongan
☐ Chinese
☐ Indian
☐ Cook Island Maori
☐ Niuean
☐ Other (please specify).....

5. COUNTRY OF BIRTH .....

6. CITY OR TOWN OF RESIDENCE .....

7. WHERE WAS THE INFECTION MOST LIKELY ACQUIRED?

☐ New Zealand (city/town if known.....)
☐ Overseas (country if known.....)
☐ Not known

8. DATE PATIENT PRESENTED ..... (Day)/ ..... (Month)/..... (Year)

9. REASON FOR TESTING FOR SYPHILIS

☐ Asymptomatic STI screening ☐ Immigration purposes ☐ Syphilis Contact

☐ Clinical symptoms or suspicion ☐ Antenatal Screening

☐ Other (please specify.....)

10. DID THE PATIENT HAVE ANY SYMPTOMS?

☐ Yes ☐ No

11. IF SYMPTOMS...

☐ Genital ulceration ☐ Rash ☐ Oral ulceration ☐ Neurological symptoms

☐ Lymphadenopathy ☐ Other (Please specify.....)

12. HIGHEST RPR/VDRL TITRE BEFORE TREATMENT

..... ☐ Unknown (not tested)

13. HIV SEROSTATUS

☐ Negative ☐ Positive ☐ Unknown

14. OTHER CONCURRENT STI DIAGNOSIS(ES) (Tick all that apply)

☐ Chlamydia ☐ Gonorrhoea ☐ Trichomoniasis ☐ Genital Herpes

☐ Genital warts ☐ Other (please identify).....

15. DATE OF LAST NEGATIVE TEST FOR SYPHILIS ..../ .../.....

☐ Never tested before ☐ Tested but date unknown

16. SEXUAL BEHAVIOUR PREVIOUS 12 MONTHS

☐ Opposite sex partners only ☐ Same sex partners only

☐ Both opposite and same sex partners ☐ Unknown

17. NUMBER OF SEX PARTNERS IN THE PAST 3 MONTHS

☐☐ Male ☐☐ Female ☐ Unknown

18. NUMBER OF SEX PARTNERS IN THE PAST 12 MONTHS

☐☐ Male ☐☐ Female ☐ Unknown

19. DO YOU THINK ORAL SEX WAS RESPONSIBLE?

☐ Yes ☐ No ☐ Unknown

20. PATIENT IS A SEX WORKER

☐ Yes ☐ No ☐ Unknown

21. LIKELY ACQUIRED SYPHILIS THROUGH CONTACT WITH SEX WORKER

☐ Yes ☐ No ☐ Unknown

If "Yes" gender of SW ☐ Female ☐ Male ☐ Transgender

22. ANY SOCIAL/SEXUAL NETWORK IMPLICATED?

☐ "Sex on Site" venue (sauna, club) ☐ Internet ☐ "Beat" (public toilet, park etc.)
☐ Bar
☐ Other.....

Any other relevant comments:

Please return by mail or fax to:

Rebecca Psutka
Department of Preventive and Social Medicine, University of Otago
P.O. Box 913, Dunedin 9054. fax: 03 479 7298

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