Science for Communities
He Pūtaiao, He Tāngata

SEXUALLY TRANSMITTED INFECTIONS IN NEW ZEALAND: SUPPLEMENTARY ANNUAL SURVEILLANCE REPORT 2022

PREPARED FOR: Ministry of Health

CLIENT REPORT No: FW23027

PREPARED BY: Health Intelligence Team, Health Group

PUBLISHED: 24 July 2023

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

Published: 24 July 2023

Suggested citation:
The Institute of Environmental Science and Research Ltd.
Sexually Transmitted Infections in New Zealand: Supplementary Annual Surveillance Report 2022
Porirua, New Zealand

Client report: FW23027

Ad hoc requests regarding sexually transmitted infections may be emailed to survqueries@esr.cri.nz

ACKNOWLEDGEMENTS

This report has been prepared by the Health Intelligence Team at ESR. Particular acknowledgements go to:

- Zoe Kumbaroff who led the analyses and drafted the report;
- Julia Scott for drafting, review and revision;
- Pauline Quinn for the collation and processing of data;
- Andrea McNeill, Callum Thirkell, and Putu Duff for peer review; and
- Callum Thirkell for supplying code and assisting with some of the analyses.

The authors would like to acknowledge that this report could not have been produced without the continuing support of clinical and laboratory staff throughout New Zealand.

Disclaimer

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Description
AMR	Antimicrobial resistance
HIV	Human immunodeficiency viruses
LGV	Lymphogranuloma venereum
MELAA	Middle Eastern, Latin American, and African
MSM	Men who have sex with men
MSW	Men who have sex with women
NHI	National Health Index
PrEP	Pre-Exposure Prophylaxis
STIs	Sexually transmitted infections
WSM	Women who have sex with men

INTRODUCTION

The ‘Sexually transmitted infections in New Zealand: Supplementary Annual Surveillance Report’ summarises additional epidemiology of sexually transmitted infections (STIs) for 2022 (the reporting period) not shown on the dashboard, with findings from 2018 to 2021 included for comparison and context, where possible. This report presents findings from clinical notifications for syphilis and gonorrhoea, with a summary table for each disease followed by further detail on notifications by sexual behaviour, and for certain populations. It presents laboratory surveillance data for perinatal gonorrhoea and chlamydia infections. Additional clinical details for syphilis and gonorrhoea are presented in Appendix 1. For other key trends in syphilis, gonorrhoea, and chlamydia, please refer to the annual dashboard.

Sentinel clinic surveillance data for first presentation genital warts and lymphogranuloma venereum (LGV) are also described in this report.

The COVID-19 pandemic response affected behavioural patterns, access to healthcare, and availability of testing in 2020 and 2021, therefore all data from 2020–2021 should be interpreted with caution.

A full description of methodology can be found in Appendix 2.

TERMINOLOGY AND INTERPRETATION

Sex:

This refers to male, female and unknown rather than gender identity.

Age-group:

Based on age at diagnosis and rounded to the nearest year using normal rounding practices.

Geographic region:

Generally reported by district except for Auckland which is reported as a region (combining Auckland, Waitemata and Counties Manukau districts) and Wellington which is reported as a region (combining Capital & Coast, Hutt Valley and Wairarapa districts).

Ethnicity:

Generally reported using prioritised ethnicity including Māori, Pacific, Asian, MELAA (Middle Eastern, Latin American, and African), and European/Other. Clinic data does not specify Asian or MELAA ethnicity which are both reported as 'Other' for historical data capture reasons.

Reporting years:

This report is a 2022 supplementary annual report with data from 2018 to 2021 generally reported to provide context and trends. Clinical notification data for gonorrhoea is only presented from 2019 to 2022 as surveillance began in late 2018.

Surveillance data sources:

Three primary sources of data are used for surveillance; these include laboratory data, sentinel aggregate clinic data and clinical notification data.

Laboratory data includes all laboratory results for gonorrhoea and chlamydia alongside demographic information.

Sentinel, aggregate data is received from sentinel Sexual Health clinics for first presentation genital warts and lymphogranuloma venereum (LGV).

Clinical notifications are received for gonorrhoea and syphilis directly from clinicians.

For further information on surveillance data sources and methodology please refer to the methods section

Sexual Behaviour

Self-reported sexual behaviour of case as reported to the treating clinician at the time of diagnosis.

INFECTIOUS SYPHILIS

From 2013 to late 2018 syphilis data was reported via voluntary sentinel surveillance from sexual health clinics. In 2017, syphilis became notifiable, and an interim notification system was available from late 2018. The change in notification procedure may have increased the number of cases reported and influenced trends (Table 1).

CHARACTERISTICS OF ALL SYPHILIS CASES

Table 1: Infectious syphilis cases by year and sexual behaviour, age-group, ethnicity, and region: 2018–2022

	2018, N = 628[1]	2019, N = 723[1]	2020, N = 514[1]	2021, N = 449[1]	2022, N = 486[1]
Sexual Behaviour					
MSM	415(66.1%)	455(62.9%)	290(56.4%)	229(51.0%)	222(45.7%)
MSW	113(18.0%)	143(19.8%)	114(22.2%)	98(21.8%)	138(28.4%)
WSM	87(13.9%)	91(12.6%)	90(17.5%)	93(20.7%)	100(20.6%)
Other	3(0.5%)	4(0.6%)	2(0.4%)	4(0.9%)	5(1.0%)
Unknown	10(1.6%)	30(4.1%)	18(3.5%)	25(5.6%)	21(4.3%)
Age Group (years)					
0–14	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	1(0.2%)
15–19	13(2.1%)	16(2.2%)	19(3.7%)	13(2.9%)	22(4.5%)
20–24	93(14.8%)	119(16.5%)	79(15.4%)	74(16.5%)	96(19.8%)
25–29	122(19.4%)	154(21.3%)	111(21.6%)	83(18.5%)	82(16.9%)
30–39	176(28.0%)	225(31.1%)	162(31.5%)	146(32.5%)	136(28.0%)
40+	224(35.7%)	209(28.9%)	143(27.8%)	133(29.6%)	149(30.7%)
Ethnicity					
European/Other	338(53.8%)	399(55.2%)	241(46.9%)	186 (41.4%)	181(37.2%)
Māori	151(24.0%)	144(19.9%)	113(22.0%)	137 (30.5%)	163(33.5%)
Pacific	41(6.5%)	56(7.7%)	53(10.3%)	56 (12.5%)	69(14.2%)
Asian	70(11.1%)	81(11.2%)	64(12.5%)	54 (12.0%)	54(11.1%)
MELAA	24(3.8%)	33(4.6%)	31(6.0%)	14 (3.1%)	14(2.9%)
Unknown	4(0.6%)	10(1.4%)	12(2.3%)	2 (0.4%)	5(1.0%)
Geographical Region					
Auckland	321(51.1%)	279(38.6%)	217(42.2%)	216(48.1%)	307(63.2%)
Canterbury	53(8.4%)	98(13.6%)	54(10.5%)	29(6.5%)	13(2.7%)
Wellington	52(8.3%)	95(13.1%)	79(15.4%)	65(14.5%)	35(7.2%)
Waikato	45(7.2%)	49(6.8%)	46(8.9%)	40(8.9%)	56(11.5%)
Southern	12(1.9%)	49(6.8%)	32(6.2%)	13(2.9%)	6(1.2%)
Bay of Plenty	44(7.0%)	48(6.6%)	24(4.7%)	21(4.7%)	17(3.5%)
Lakes	17(2.7%)	21(2.9%)	18(3.5%)	9(2.0%)	3(0.6%)
MidCentral	20(3.2%)	15(2.1%)	10(1.9%)	16(3.6%)	8(1.6%)
Hawkes Bay	9(1.4%)	18(2.5%)	6(1.2%)	4(0.9%)	12(2.5%)
Taranaki	14(2.2%)	12(1.7%)	5(1.0%)	4(0.9%)	4(0.8%)
Whanganui	13(2.1%)	16(2.2%)	5(1.0%)	6(1.3%)	7(1.4%)
Nelson Marlborough	9(1.4%)	4(0.6%)	5(1.0%)	5(1.1%)	4(0.8%)
Northland	10(1.6%)	13(1.8%)	6(1.2%)	19(4.2%)	13(2.7%)
Tairawhiti	7(1.1%)	3(0.4%)	4(0.8%)	0(0.0%)	0(0.0%)
West Coast	1(0.2%)	3(0.4%)	1(0.2%)	0(0.0%)	0(0.0%)
South Canterbury	1(0.2%)	0(0.0%)	2(0.4%)	2(0.4%)	1(0.2%)

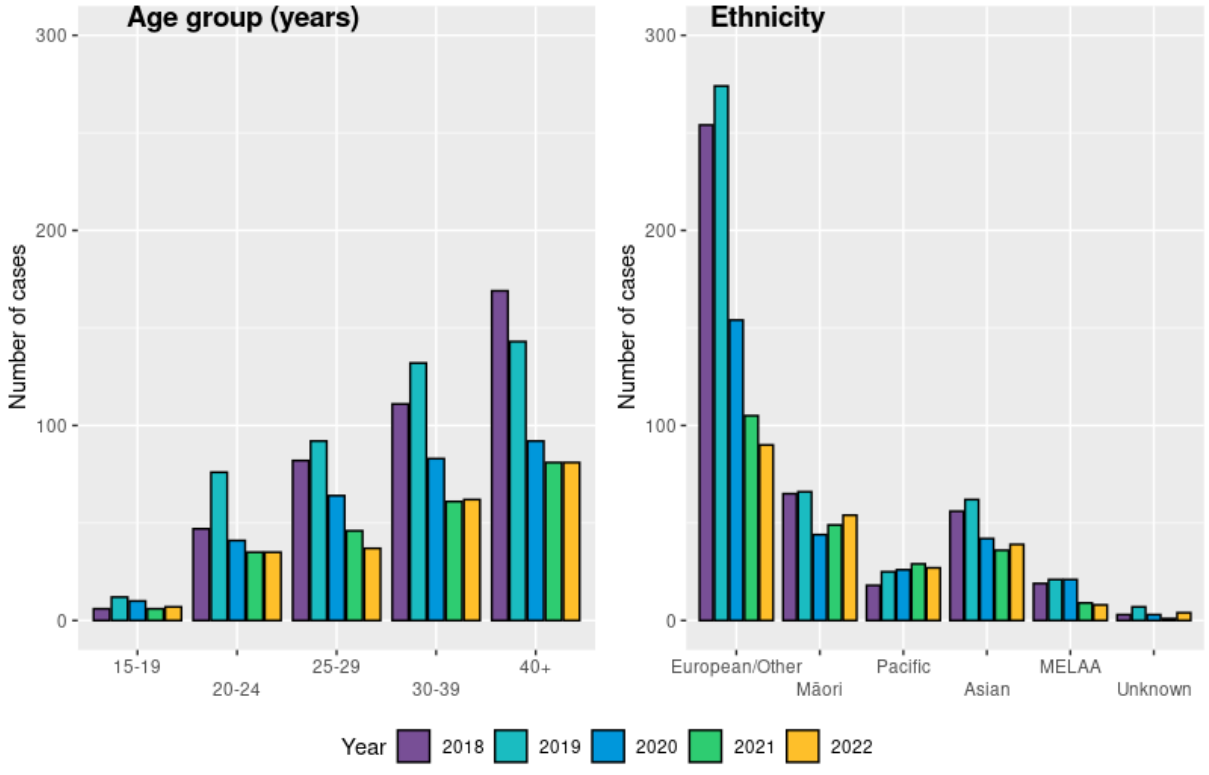
[1] n(%)
[2] Percentages may not total 100% due to rounding infectious syphilis cases in different risk groups

MSM by age-group & ethnicity

Key findings (Figure 1)

- Of all infectious syphilis cases among men who have sex with men (MSM) in 2022, 90 cases (41%) were European/Other, 54 (24%) were of Māori ethnicity, 27 (12%) were Pacific, 39 (18%) were of Asian ethnicity, 8 (4%) were of MELAA ethnicity, and four cases were of unknown ethnicity.
- Infectious syphilis cases among Māori MSM increased between 2021 and 2022 (49 to 54 cases) and decreased among those of European/other ethnicities (105 to 90 cases, 14% decrease). Case numbers among MSM of Asian ethnicity Asian (36 and 39 cases) and Pacific ethnicity (29 and 27 cases) remained relatively stable.
- Cases remained stable across most age-groups of MSM between 2021 and 2022, however there was a 20% decrease observed for the 25–29 years age group. The majority of MSM cases continue to be seen in the 30–39 and 40+ age groups.
- The highest number of cases among MSM by ethnicity and age group in 2022 were reported amongst those of European/Other ethnicity aged 40+ years (56/222 cases). A high number of cases were also reported for Asian aged 30–39 years (22/222 cases).
- The number of reported infectious syphilis cases among MSM increased in Auckland (119 to 141 cases), decreased in Wellington (27 to 17 cases) and Canterbury (23 to 8 cases), and remained stable in other regions.
- Of infectious syphilis cases among MSM, nearly two thirds (141 cases, 64%) were reported in the Auckland region; with a further 23% in Waikato (25 cases ,11%), Wellington (17 cases 8%), and Canterbury (8 cases 4%). This represents a total of 87% of all cases reported as MSM nationally from these four regions).
- The largest decreases by region in MSM between 2021 and 2022 were reported in Canterbury (65%, 23 to 8 cases) and Wellington (37%, 27 to 17 cases).

Figure 1: Infectious syphilis cases amongst MSM by age group and ethnicity: 2018–2022

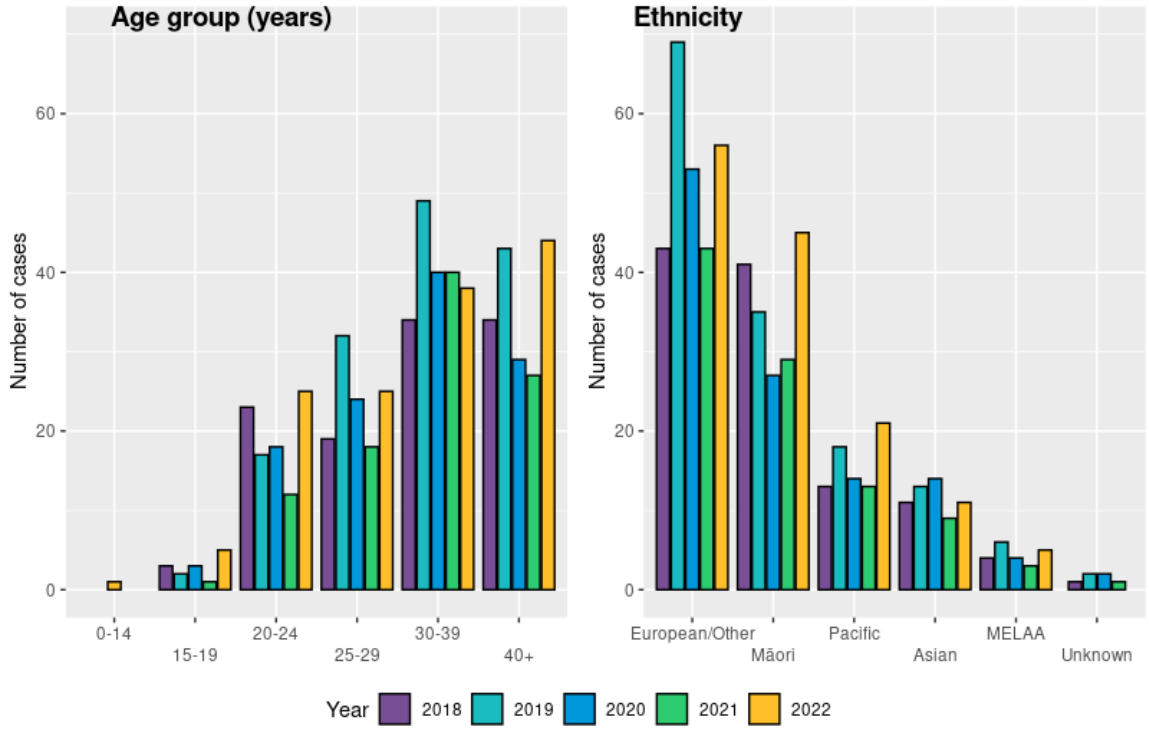


MSW by age-group & ethnicity

Key findings (Figure 2)

- The number of infectious syphilis cases among men who have sex with women (MSW) increased by 41% between 2021 (98 cases) and 2022 (138 cases).
- In 2022 the number of infectious syphilis cases among MSW increased across all ethnicities compared to 2021. The highest number of cases were reported among people of European/Other ethnicity (56 cases), followed by Māori (45 cases), Pacific (21 cases), and Asian (11 cases).
- The proportion of infectious syphilis cases by ethnicity in 2022 increased among Māori and Pacific groups and decreased among European/Other compared with 2021, with those of European ethnicity accounting for 41% of all MSW cases compared to 47% in 2021, Māori accounting for 33% compared to 30%, Pacific accounting for 15% compared to 13% and Asian accounting for 8% compared to 9% in 2021.
- Cases among MSW were highest in the 30–39 and 40+ year age-groups. However, five cases were reported in MSW under 20 years in 2022, higher than previous years.
- An increase in the number of cases in MSW was seen across most age groups between 2021 and 2022, with numbers in the 30–39 age group remaining stable. The largest increases were seen in those aged 20–24 (12 to 26 cases, 117% increase) and those aged 40+ years (27 to 44 cases, 63% increase).
- The highest number of cases by ethnicity and age-group in 2022 were reported amongst those of European/other ethnicity aged 30–39 years and 40+ years (17 and 23 of 138 cases) followed by those of Māori ethnicity aged 30–39 years and 40+ years (12 and 13 out of 138 cases).
- Cases among MSW nearly doubled in Auckland (44 to 85 cases) and Waikato (10 to 17 cases), decreased in Wellington (15 to 8 cases) and remained low and stable in other regions in 2022 compared in 2021.
- The vast majority (84%, 116 of 138 cases) of MSW cases were reported in the north of the North Island (including Auckland (85/138), Waikato (17/138), Bay of Plenty (8/138) and Northland (6/138)).

Figure 2: Infectious syphilis cases amongst MSW by age-group and ethnicity: 2018–2022

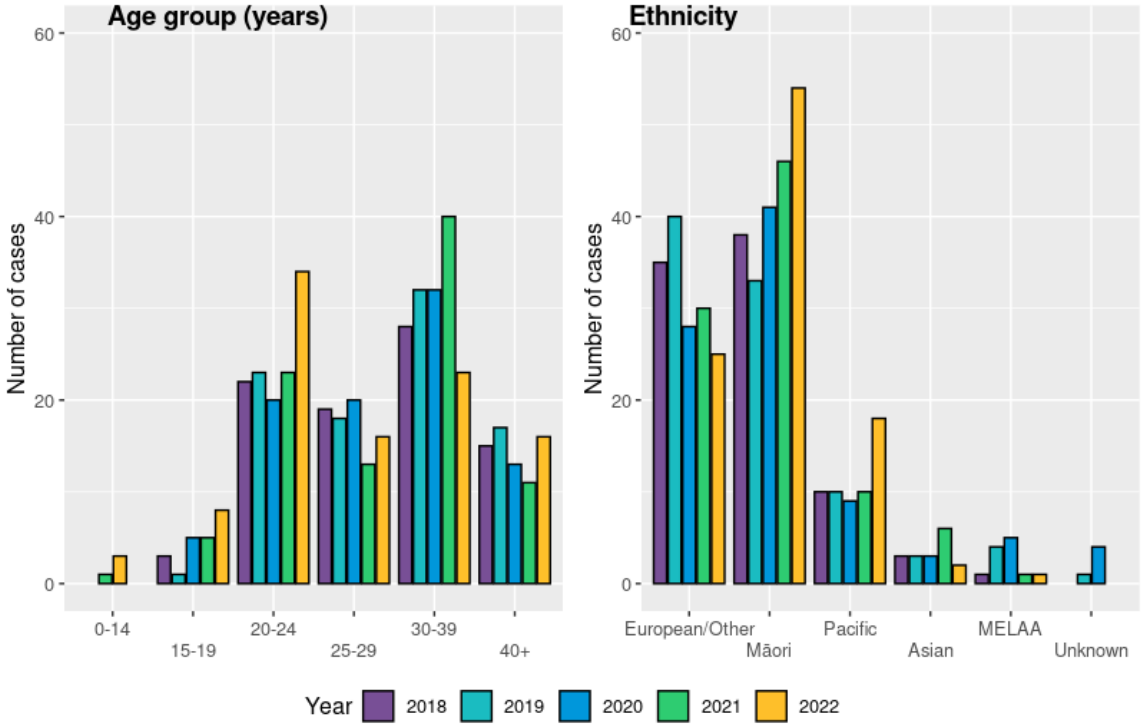


WSM by age-group & ethnicity

Key findings (Figure 3)

- Cases of infectious syphilis among women who have sex with men (WSM) increased from 93 to 100 cases from 2021 to 2022.
- Prior to 2017, most infectious syphilis cases among WSM were of European/Other ethnicity. However, the number and proportion of cases of Māori ethnicity has increased markedly and in every year since 2020, most infectious syphilis cases among WSM were of Māori ethnicity. The number of cases reported for Māori and Pacific groups has increased from 2021 to 2022, however has decreased for European/Other and Asan ethnicities. In 2022, 54% (54/100) of cases reported were of Māori ethnicity, 25% (25/100) cases were European/other, and 18% (18/100) cases were Pacific.
- The vast majority of infectious syphilis cases (90%) among WSM were of reproductive age (defined by the Ministry of Health as aged 15–44 years (Ministry of Health, 2021)).
- The highest number of cases by ethnicity and age-group in 2022 were reported amongst those of Māori ethnicity aged 20–24 (21/100 cases), 30–39 (9/100 cases) and 40+ (9/100 cases), and European/Other aged 30–39 (10/100 cases).
- In 2022, 67 of 100 cases (67%) among WSM were reported in Auckland, 12 of the 100 cases (12%) were in Waikato, and 8 of 100 (8%) were in Wellington. All other regions had between zero and four cases.
- Between 2021 to 2022, cases increased in the Auckland (from 39 to 67 cases) and Waikato (6 to 12 cases) regions. Cases decreased in Wellington (16 to 8 cases), Bay of Plenty, Lakes, MidCentral, and Northland, and remained low and stable in all other regions.
- The majority of WSM cases of European/other ethnicity in 2022 were reported in Auckland (16/25). Among cases of Māori ethnicity, 34/54 were in Auckland and 6/54 were in Waikato. Among cases of Pacific ethnicity 14/18 were in the Auckland region.

Figure 3: Infectious syphilis cases amongst WSM by age-group and ethnicity: 2018–2022



SPECIAL POPULATIONS WITH INFECTIOUS SYPHILIS

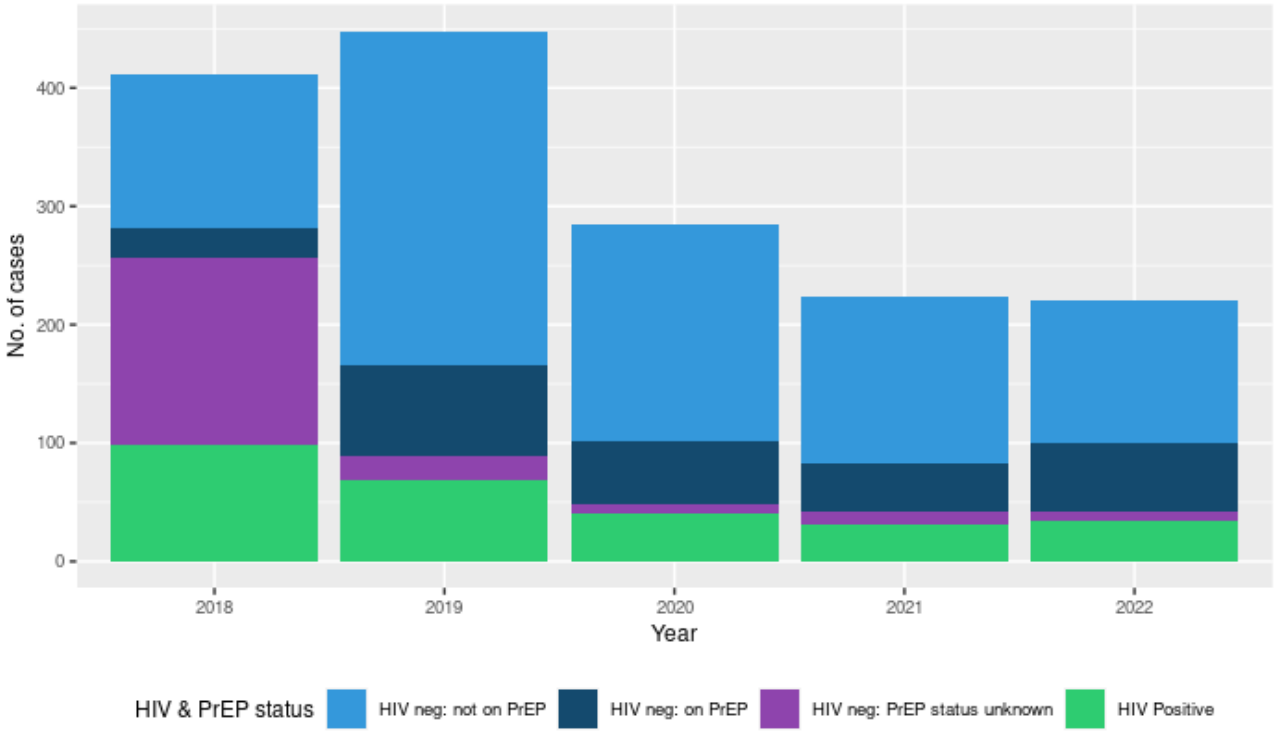
HIV and PrEP status amongst MSM

Pre-Exposure Prophylaxis (PrEP) is a medication for HIV-negative people which significantly reduces the chance of HIV acquisition. PrEP became available in New Zealand as part of a research trial and via importations in 2018, and since 2019 has been funded for those who meet special authority criteria (PHARMAC, 2021). PrEP users are primarily MSM.

Among the 222 MSM with syphilis in 2022, 35 were living with HIV (16%) (Figure 4). This is a slight increase from the number and proportion of people with syphilis living with HIV in 2021 (31/229 cases, 14%).

Of the 222 MSM with syphilis, 185 had a known HIV negative status. Of these, 178 (96%) had a known PrEP status, with 58 (31%) reporting taking PrEP in 2022.

Figure 4: HIV and PrEP status amongst MSM with syphilis: 2018–2022



Women of reproductive age and pregnant women

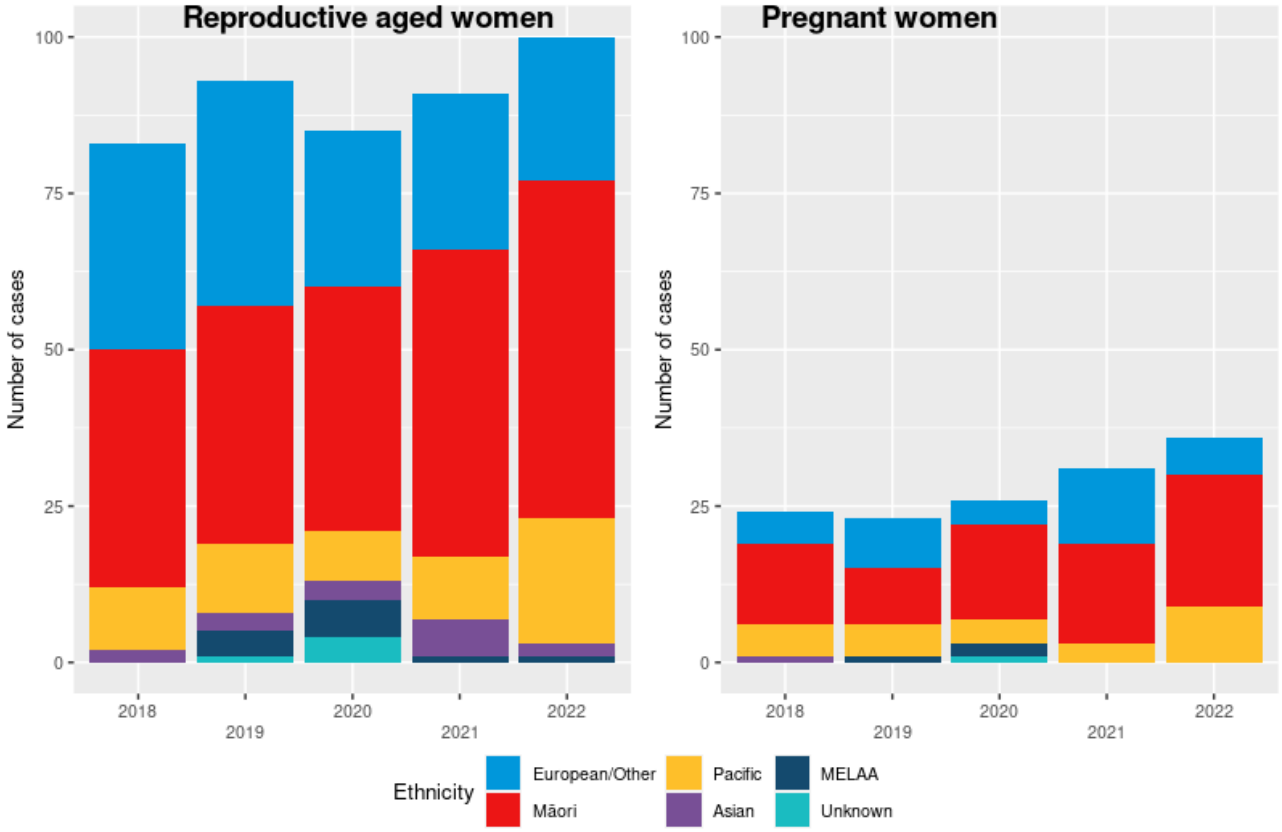
In 2022, (Figure 5) the total number of syphilis cases among women of reproductive age (between 15–44 years) increased by 9 cases (91 to 100) compared to 2021.Cases among Māori and Pacific women in this age group increased between 2021 and 2022 (49 to 54 and 10 to 20 cases respectively), while numbers decreased or remained stable for other groups.

The number of syphilis cases among pregnant women increased from 31 cases in 2021 to 36 cases in 2022. Compared to 2021, the greatest increase in cases was Pacific ethnicities (3 to 9 cases, 200% increase), followed by Māori (16 to 21 cases, 31% increase). Cases among European/Other decreased by 50% (12 to 6 cases) and remained at zero cases for Asian and MELAA ethnicities.

Of the 100 syphilis cases amongst women of reproductive age, 36 (36%) were reported to be pregnant, similar to 2021 (31/91 cases, 34%).

Most syphilis cases among pregnant women were in Auckland (27 cases).

Figure 5: Syphilis cases among women of reproductive age and pregnant women by ethnicity: 2018–2022

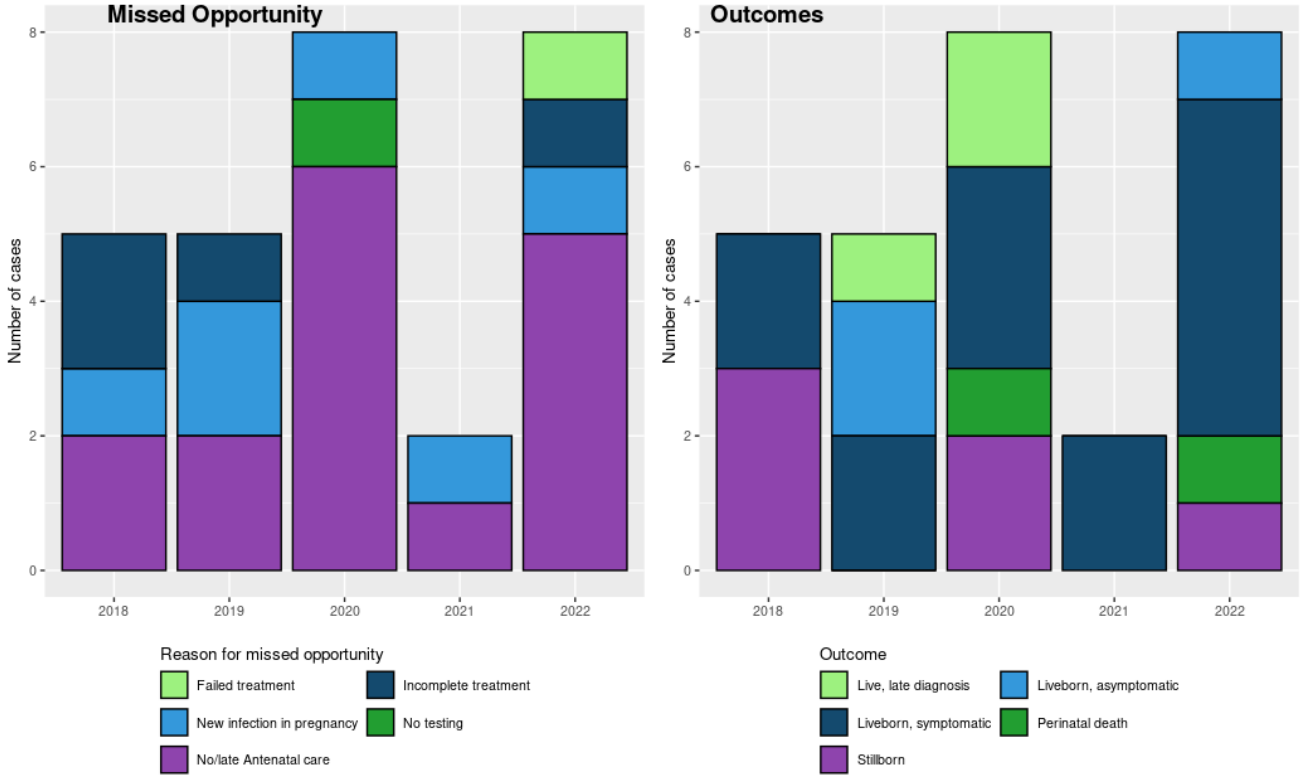


Congenital Syphilis

In order to prevent congenital syphilis, pregnant women must receive antenatal care, which includes first trimester screening for syphilis, be treated appropriately for the stage of disease and pregnancy at least four weeks prior to delivery and remain syphilis free at delivery (New Zealand Sexual Health Society, 2020). Analysis of information on case report forms for infants with congenital syphilis and their mothers was undertaken to identify where in the antenatal care pathway the opportunity to prevent a case of congenital syphilis was missed.

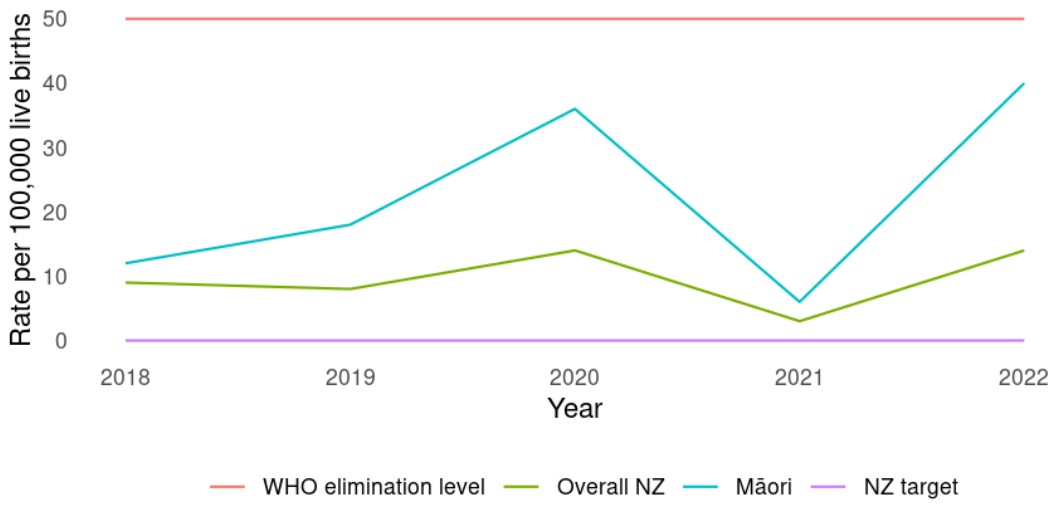
There were eight cases of congenital syphilis reported in 2022. Six were liveborn with symptoms, one was a perinatal death and the other stillborn. The mothers of five cases received no/late antenatal care, one had a new infection in pregnancy, one had incomplete treatment, and one had treatment failure (Figure 6).

Figure 6: Congenital syphilis: missed opportunities to identify syphilis in pregnancy and outcomes of congenital syphilis cases: 2018–2022



The World Health Organization (WHO) defines the elimination of congenital syphilis as a case rate of ≤50 per 100 000 live births, and has set process and impact targets for high prevalence countries. (World Health Organization, 2021) One of the goals of Ngā Pokenga Paipai Me Ngā Pokenga Huaketo Mā Te Toto: Te Rautaki O Aotearoa, the Aotearoa New Zealand Sexually Transmitted and Blood Borne Infection Strategy 2023–2030 is the elimination of congenital syphilis in New Zealand, which is defined as zero cases. (Ministry of Health, 2023). The rate of congenital syphilis, 14 per 100,000 live births, increased from 2021 to 2022, and is at the highest level seen, equal to that seen in 2020. The 2022 rate of congenital syphilis among Māori was substantially higher at 40 per 100,000 live births. This disparity reflects ongoing inequitiesin access to health care, including antenatal and sexual health care, for Māori (Figure 7).

Figure 7 Congenital syphilis rates per 100,000 live births 2018–2022



Infectious syphilis in sex workers

In 2022, 16 people with infectious syphilis reported being sex workers (Table 2).

In 2022, the majority of cases who reported being sex workers were of European/other or Māori ethnicity, were either MSM or WSM, and were in Auckland. Due to low numbers no further analysis is provided.

Table 2: Sex worker status amongst infectious syphilis cases: 2018–2022

Sex Worker Status	2018	2019	2020	2021	2022
Case is a sex worker	19 (3.0%)	24 (3.3%)	9 (1.8%)	11 (2.4%)	16 (3.3%)
Case is not a sex worker	580(92.4%)	633(87.6%)	465 (90.5%)	380 (84.6%)	413 (85.0%)
Unknown	29 (4.6%)	66 (9.1%)	40 (7.8%)	58 (12.9%)	57 (11.7%)
Total	**628 (100.0%)**	**723 (100.0%)**	**514 (100.0%)**	**449 (100.0%)**	**486 (100.0%)**

[1]Percentages may not total 100% due to rounding

CLINICAL NOTIFICATION SURVEILLANCE OF GONORRHOEA 2022

Clinical notifications for gonorrhoea have been collected since late 2018 (Table 3). In 2022 clinical notifications were received for a subset of laboratory confirmed cases (3619/6969, 52%).

CHARACTERISTICS OF ALL CLINICAL GONORRHOEA NOTIFICATIONS 2022

Table 3: Clinical gonorrhoea notifications by sexual behaviour and age, ethnicity, and region: 2022

	MSM n = 940[1]	MSW n = 892[1]	Unknown/other n = 818[1]	WSM n = 969[1]	Total n=3,619[1]
Age Group					
0–14	4 (0.4%)	2(0.2%)	11 (1.3%)	4 (0.4%)	21 (0.6%)
15–19	44 (4.7%)	98(11.0%)	104 (12.7%)	189 (19.5%)	435 (12.0%)
20–24	155 (15.5%)	209(23.4%)	210 (25.6%)	280 (28.9%)	854 (23.6%)
25–29	205 (21.8%)	177(19.8%)	188 (23.0%)	190 (19.6%)	760 (21.0%)
30–39	312 (33.2%)	262(29.4%)	187 (22.9%)	217 (22.4%)	978 (27.0%)
40+	220 (23.4%)	144(16.1%)	118 (14.4%)	89 (9.2%)	571 (15.8%)
Ethnicity					
European/Other	492(52.3%)	298(33.4%)	265(32.4%)	308(31.8%)	1,363(37.7%)
Māori	164(17.4%)	297(33.3%)	314(38.4%)	443(45.7%)	1,218(33.7%)
Pacific	81(8.6%)	180(20.2%)	140(17.1%)	158(16.3%)	559(15.4%)
Asian	160(17.0%)	78(8.7%)	55(6.7%)	35(3.6%)	328(9.1%)
MELAA	21(2.2%)	20(2.2%)	16(2.0%)	10(1.0%)	67(1.9%)
Unknown	22(2.3%)	19(2.1%)	28(3.4%)	15(1.5%)	84(2.3%)
Geographical Region					
Auckland Region	406(43.2%)	389(43.6%)	431(52.7%)	421(43.4%)	1,647(45.5%)
Canterbury	139(14.8%)	113(12.7%)	83(10.1%)	90(9.3%)	425(11.7%)
Wellington Region	133(14.1%)	59(6.6%)	66(8.1%)	60(6.2%)	318(8.8%)
Waikato	83(8.8%)	106(11.9%)	70(8.6%)	117(12.1%)	376(10.4%)
Southern	55(5.9%)	17(1.9%)	10(1.2%)	21(2.2%)	103(2.8%)
Bay of Plenty	23(2.4%)	72(8.1%)	41(5.0%)	90(9.3%)	226(6.2%)
Lakes	16(1.7%)	22(2.5%)	25(3.1%)	26(2.7%)	89(2.5%)
MidCentral	29(3.1%)	28(3.1%)	21(2.6%)	28(2.9%)	106(2.9%)
Hawke's Bay	5(0.5%)	8(0.9%)	21(2.6%)	15(1.5%)	49(1.4%)
Taranaki	13(1.4%)	10(1.1%)	15(1.8%)	12(1.2%)	50(1.4%)
Whanganui	7(0.7%)	14(1.6%)	8(1.0%)	16(1.7%)	45(1.2%)
Nelson Marlborough	11(1.2%)	12(1.3%)	13(1.6%)	19(2.0%)	55(1.5%)
Northland	19(2.0%)	33(3.7%)	13(1.6%)	36(3.7%)	101(2.8%)
Tairawhiti	<5	6(0.7%)	<5	10(1.0%)	16(0.4%)
West Coast	<5	<5	<5	<5	3(0.1%)
South Canterbury	<5	<5	<5	7(0.7%)	10(0.3%)

[1] n(%)

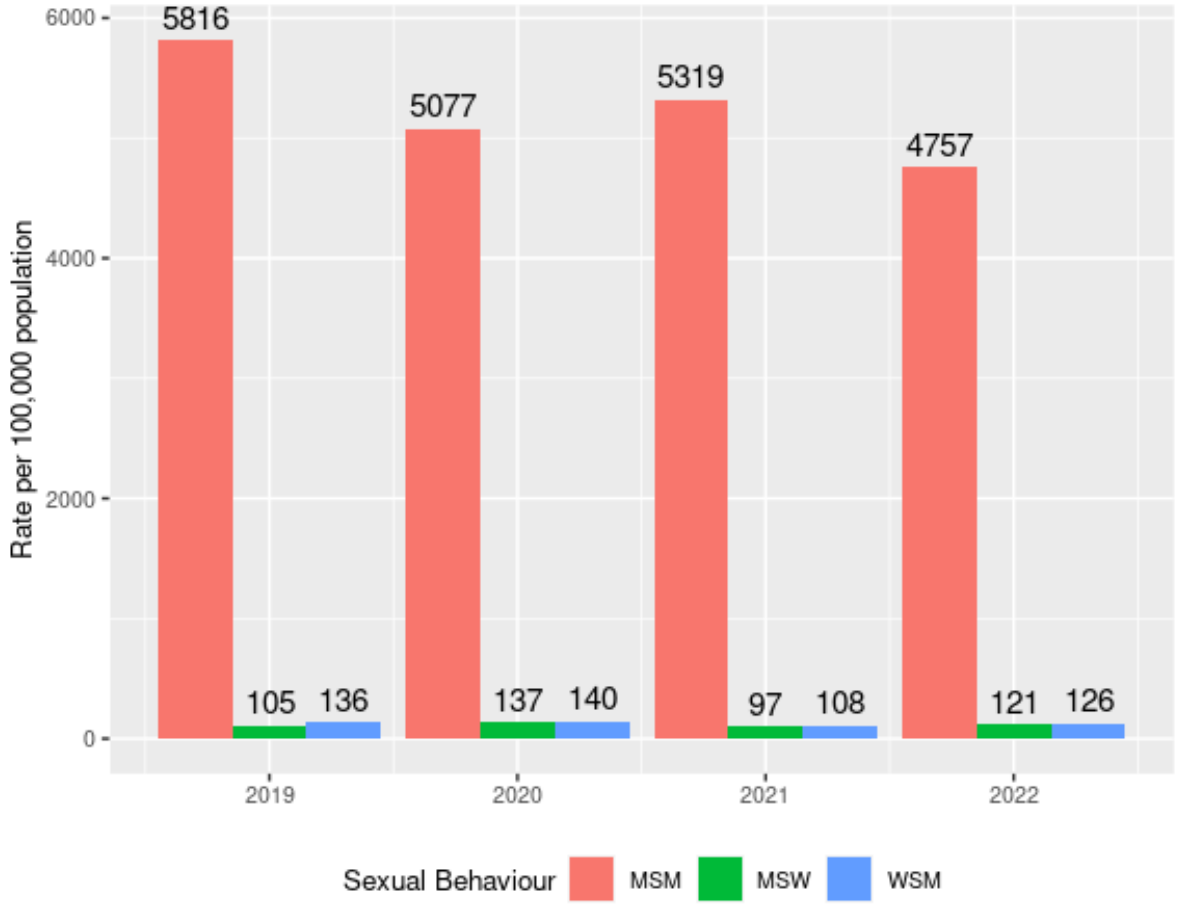
[2] Percentages may not total 100% due to rounding

CLINICAL GONORRHOEA NOTIFICATION COUNTS

Estimated rates of gonorrhoea by sexual behaviour

Estimated gonorrhoea rates by sexual behaviour show clear disparities for MSM compared to MSW and WSM (Figure 8). MSM rates reduced from 5319 per 100,000 in 2021 to 4757 per 100,000 population in 2022. Rates for MSW and WSM have remained relatively stable over 2019–2022, with slight but consistently higher rates for WSM than MSW.

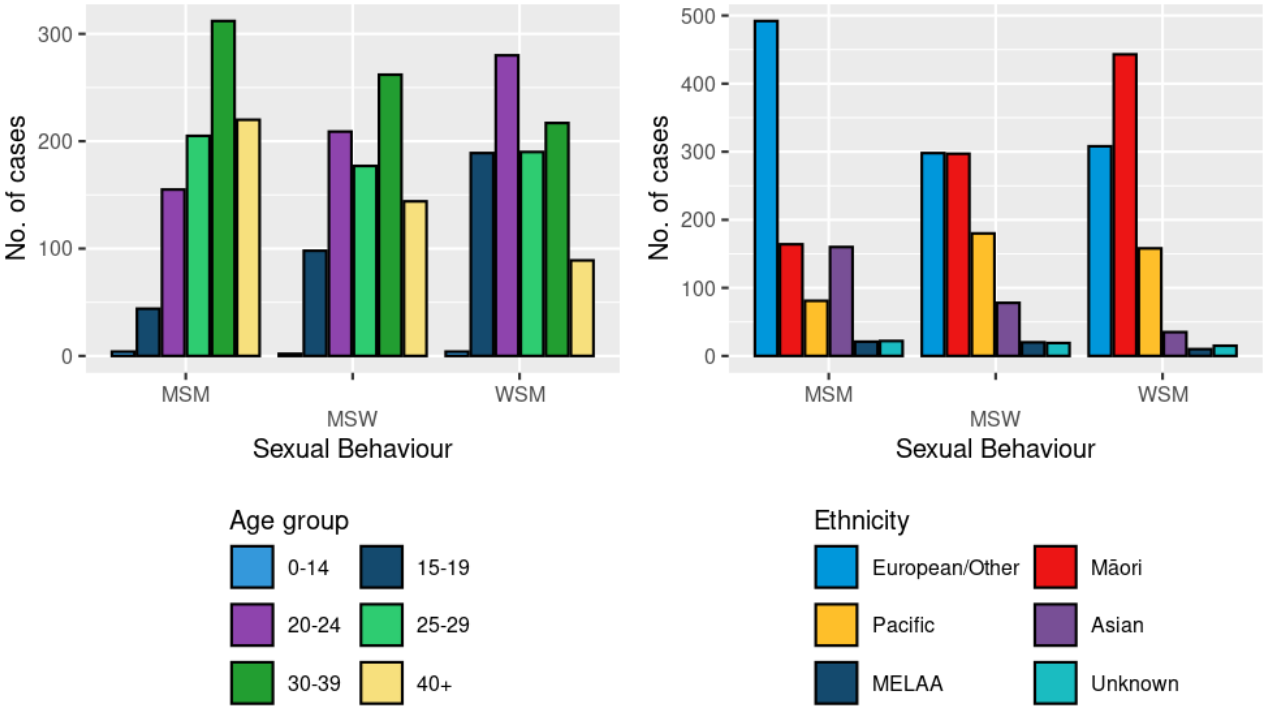
Figure 8. Estimated gonorrhoea rates per 100,000 population by sexual behaviour, 2019–2022



Sexual behaviour by age-group and ethnicity

- Of the clinical notifications for gonorrhoea, 969 cases (27%) were reported to be WSM, 892 (25%) MSW and 940 (26%) MSM (Figure 9). The proportion of notifications reported to be MSM decreased from 2021 (from 32%) while the proportion of cases reported to be WSM and MSW increased (from 25% and 22% respectively). Together, women who have sex with women and transgender people account for small numbers of cases (2% of total cases and included in 'other' category in Table 3). For 21% of cases, clinicians reported sexual behaviour as 'unknown'. The 'other' and 'unknown' categories are not included in the following graphs.
- By age and sexual behaviour, gonorrhoea cases identified as MSM and MSW were predominantly in the 20–40+ age-groups, with the peak in the 30–39 age-group. Gonorrhoea cases among WSM were predominantly in the 15–39 years age-groups, with the peak in the 20–24 age-group.
- Among MSM, 52% of cases were of European/Other ethnicity, 17% were Māori, 17% were Asian, and 9% were Pacific. In cases among MSW, 33% were of European/other ethnicity, 33% Māori, 20% Pacific, and 9% were Asian. The highest number of WSM cases was reported amongst those of Māori ethnicity (46% of cases), followed by European/other (32% of cases) and then Pacific (16% of cases).
- The proportion of cases reported to be of Pacific ethnicity has increased for MSM and MSW but decreased slightly for WSM sexual behaviours in 2022 compared to 2021. The proportion of Māori cases reporting MSM decreased slightly, and the proportion of Asian cases reported MSM increased slightly between 2021 and 2022.

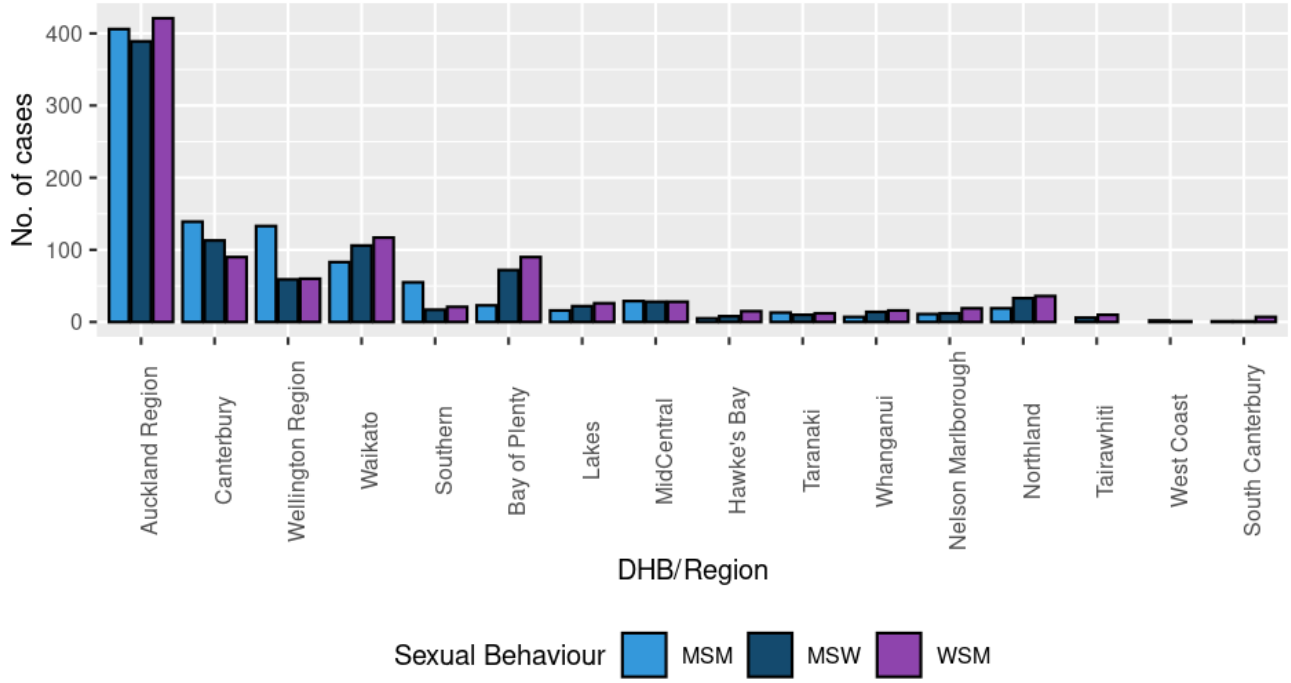
Figure 9: Clinical notifications for gonorrhoea by sexual behaviour and age-group and ethnicity: 2022



Sexual behaviour of cases notified with gonorrhoea in 2022 by district/region

In 2022, almost half (46%) the clinical notifications for gonorrhoea were received from the Auckland region (Figure 10). Auckland, Wellington and Canterbury regions accounted for 72% of all MSM cases, compared to 74% in 2021. Canterbury, Wellington Region, Southern, Taranaki, and MidCentral reported a higher proportion of MSM cases compared to other known sexual behaviours. Auckland, Waikato, Bay of Plenty, Lakes, Hawke's Bay, Whanganui, Northland, Tairawhiti, and South Canterbury reported more cases amongst WSM than other sexual behaviours.

Figure 10: Clinical notifications for gonorrhoea by sexual behaviour and region: 2022



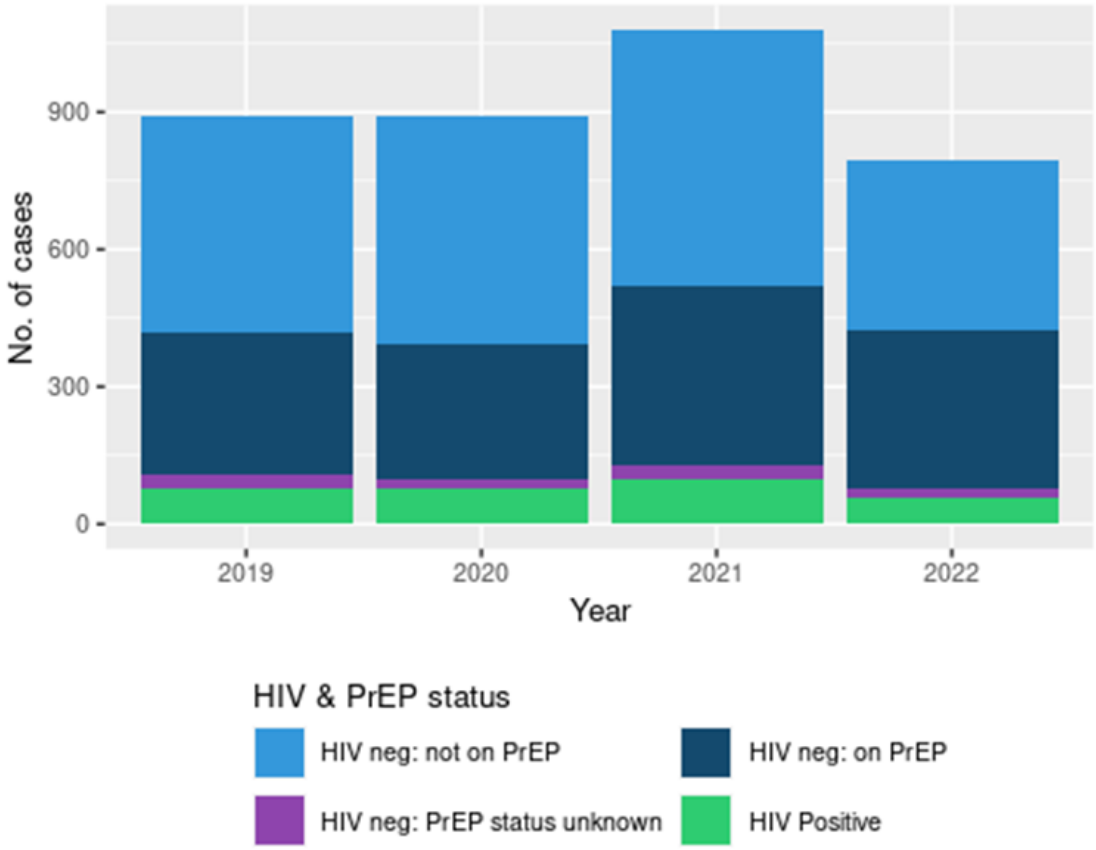
SPECIAL POPULATIONS AMONG CASES NOTIFIED WITH GONORRHOEA IN 2022

HIV and PrEP status amongst MSM

Of the 940 MSM with gonorrhoea, 740 (78.7%) were HIV negative and 56 (6.0%) were living with HIV (Figure 11). HIV status was unknown for 144 cases (15.3%). The proportion of MSM with gonorrhoea who were living with HIV decreased compared to 2021 (from 8.5%).

Of the 796 MSM cases with a known HIV negative status, 373 (46.9%) were not on PrEP, 343 (43.1%) reported being on PrEP while PrEP status was unknown for 24 (3.0%).

Figure 11: HIV and PrEP status of clinical gonorrhoea notifications amongst MSM: 2019–2022



*Individuals with an unknown HIV status not included in this figure

Gonorrhoea in sex workers

Of all gonorrhoea clinical notifications received in 2022, 67 (1.9%) reported being sex worker, compared to 60 (1.7%) in 2021(Table 4). Among female cases, 52 (3.8%) were reported to be sex workers compared to 42 cases (3%) in 2021. Among male cases, 15 (0.7%) were reported to be sex workers in 2022 and 16 were reported in 2021 (1%). In 2021, the sex work status of cases was unknown in 24.3% of female cases and 17.0% of male cases.

The highest numbers of gonorrhoea notifications identified as sex workers in 2022 were in Auckland (24 cases), followed by Canterbury (12 cases); the number of cases decreased in Auckland compared to 2021 (39 cases) but increased in Canterbury compared to 2021 (6 cases).

In 2022, most cases amongst sex workers were of European/Other (35/67, 52%) or Māori (25/67, 37%) ethnicity. By sexual behaviour, 42/67 (63%) were WSM, 8/67 (12%) were MSM.

Table 4: Sex worker status of gonorrhoea cases by sex in 2019–2022

Sex Worker Status	2019	2020	2021	2022
Case is a sex worker	88 (2.8%)	88 (2.3%)	60 (1.7%)	67 (1.9%)
Case is not a sex worker	2512 (80.7%)	3039 (80.4%)	2919 (80.7%)	2829 (78.2%)
Unknown	511 (16.4%)	652 (17.3%)	638 (17.6%)	723 (20.0%)
Total	**3111 (100.0%)**	**3779 (100.0%)**	**3617 (100.0%)**	**3619 (100.0%)**

ADDITIONAL LABORATORY SURVEILLANCE

GONORRHOEA AND CHLAMYDIA BY SITE OF INFECTION

Gonorrhoea

The site from which the specimen was taken was recorded for 96.8% (9,276/9,582) of positive specimens. The most common site recorded in 2022 was urogenital for females (86.8%) (Table 5) and males (62.0%)(Table 6). Of the 318 other/unknown specimen sites, 12 were from the eye. Totals in these tables are positive specimens rather than cases of gonorrhoea, therefore numbers are higher than total gonorrhoea case counts reported elsewhere.

The numbers of positive urogenital specimens increased from 2018 to 2020 in both males and females, decreased in 2021 and then increased again in 2022 in line with overall gonorrhoea case count trends. Among females, numbers of positive ano-rectal and pharyngeal specimens followed the same pattern as positive urogenital specimens. Among males, numbers of positive anorectal specimens increased, while numbers of positive pharyngeal specimens fluctuated (Figure 12).

Table 5. Gonorrhoea by site, female, 2018–2022

Specimen site	2018	2019	2020	2021	2022
Ano-rectal	53 (2.2%)	64 (1.8%)	83 (2.1%)	79 (2.6%)	87 (2.5%)
Pharyngeal	102 (4.2%)	175 (4.9%)	181 (4.6%)	160 (5.3%)	214 (6.2%)
Urogenital	2069 (85.1%)	3122 (86.8%)	3433 (87.8%)	2636 (87.7%)	2986 (86.8%)
Other/Unknown	208 (8.6%)	236 (6.6%)	213 (5.4%)	130 (4.3%)	155 (4.5%)
Total	**2432 (100.0%)**	**3597 (100.0%)**	**3910 (100.0%)**	**3005 (100.0%)**	**3442 (100.0%)**

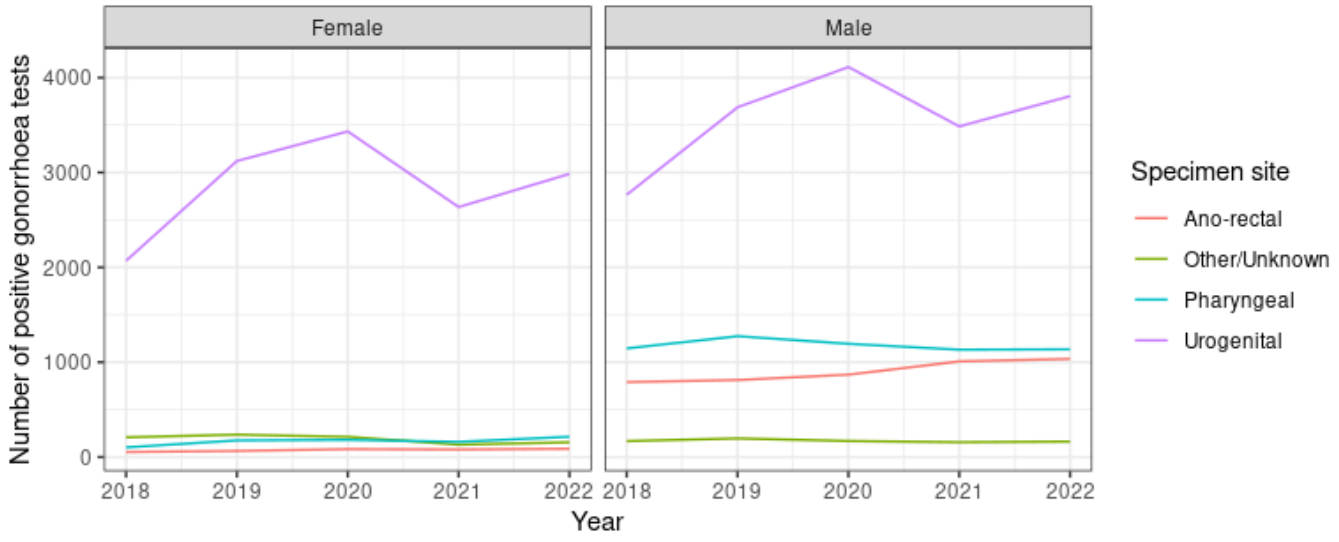
*Tests with unknown or indeterminant recorded for sex were removed from the table (35 – 62 tests per year).

Table 6. Gonorrhoea by site, male, 2018–2022

Specimen site	2018	2019	2020	2021	2022
Ano-rectal	790 (16.2%)	812 (13.6%)	869 (13.7%)	1008 (17.4%)	1035 (16.9%)
Pharyngeal	1145 (23.5%)	1274 (21.3%)	1194 (18.8%)	1132 (19.6%)	1136 (18.5%)
Urogenital	2765 (56.8%)	3688 (61.8%)	4112 (64.8%)	3486 (60.3%)	3806 (62.0%)
Other/Unknown	168 (3.5%)	196 (3.3%)	169 (2.7%)	156 (2.7%)	163 (2.7%)
Total	**4868 (100.0%)**	**5970 (100.0%)**	**6344 (100.0%)**	**5782 (100.0%)**	**6140 (100.0%)**

*Tests with unknown or indeterminant recorded for sex were removed from the table (35 – 62 tests per year).

Figure 12. Number of positive gonorrhoea tests by sex and site of infection, 2018–2022



Chlamydia

The site from which the specimen was taken was recorded for 98.5% (26,626/27,038) of positive specimens in 2022. The most common site recorded in 2022 was urogenital for males (75.6%) and females (93.5%). Of the 882 other/unknown specimens in 2022, 125 specimens were from the eye.

Over 2018–2022, there has been an overall decrease in the number of positive tests for specimens taken from the urogenital site for males, and a more substantial decrease for females, however the number of positive tests remains higher for females than males. Among females between 2018 and 2022 numbers of positive anorectal specimens fluctuated, while numbers of positive pharyngeal specimens fluctuated to 2021 and then increased in 2022. Among males, numbers of positive anorectal and pharyngeal specimens increased from 2018 to 2019, decreased in 2020 and then increased again in 2021 and 2022.

Table 7. Chlamydia by site, female, 2018–2022

Specimen site	2018	2019	2020	2021	2022
Ano-rectal	231 (1.0%)	270 (1.2%)	221 (1.2%)	224 (1.3%)	218 (1.3%)
Pharyngeal	138 (0.6%)	179 (0.8%)	138 (0.8%)	168 (1.0%)	210 (1.2%)
Urogenital	20859 (91.7%)	20954 (91.6%)	17085 (93.0%)	16329 (93.6%)	16175 (93.5%)
Other/Unknown	1520 (6.7%)	1483 (6.5%)	923 (5.0%)	723 (4.1%)	689 (4.0%)
Total	**22748 (100.0%)**	**22886 (100.0%)**	**18367 (100.0%)**	**17444 (100.0%)**	**17292 (100.0%)**

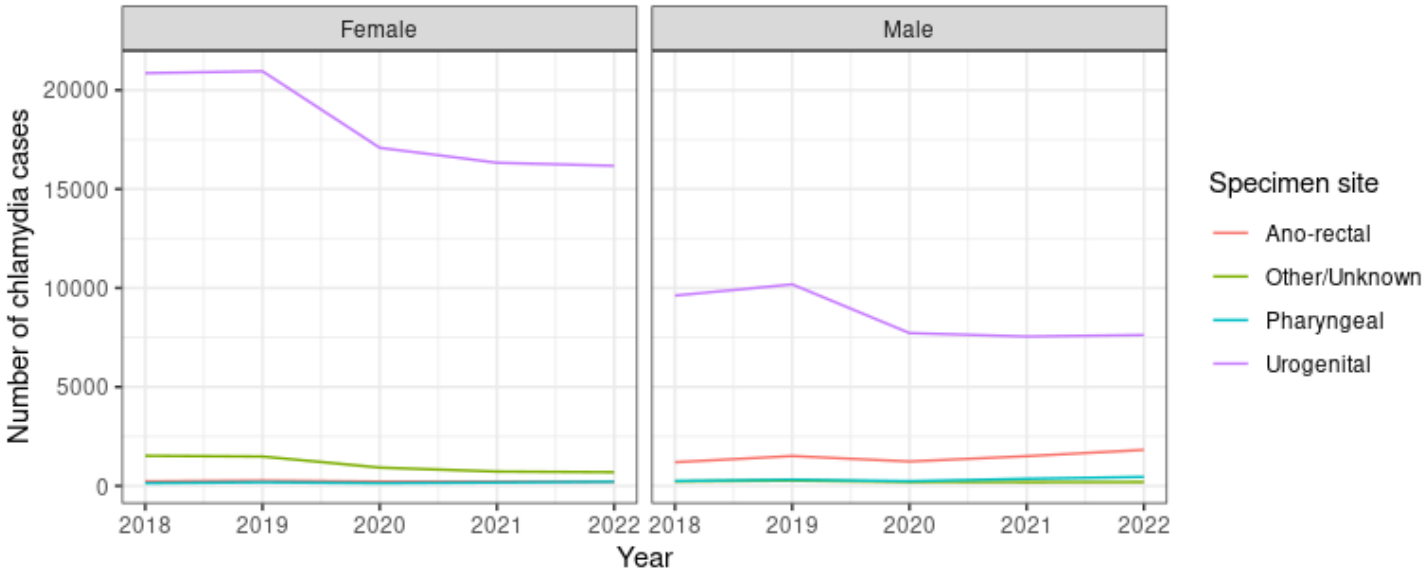
*Tests with unknown or indeterminant recorded for sex were removed from the figure (37 – 258 tests per year)

Table 8. Chlamydia by site, male, 2018–2022

Specimen site	2018	2019	2020	2021	2022
Ano-rectal	1195 (10.6%)	1508 (12.3%)	1233 (13.1%)	1501 (15.6%)	1819 (18.0%)
Pharyngeal	247 (2.2%)	312 (2.5%)	236 (2.5%)	357 (3.7%)	455 (4.5%)
Urogenital	9618 (85.2%)	10183 (83.0%)	7721 (82.2%)	7549 (78.7%)	7624 (75.6%)
Other/Unknown	226 (2.0%)	266 (2.2%)	200 (2.1%)	187 (1.9%)	193 (1.9%)
Total	**11286 (100.0%)**	**12270 (100.0%)**	**9390 (100.0%)**	**9594 (100.0%)**	**10091 (100.0%)**

* Tests with unknown or indeterminant recorded for sex were removed from the figure (37 – 258 tests per year)

Figure 13. Number of positive chlamydia tests by sex and site of infection, 2018-2022



PERINATAL GONORRHOEA AND CHLAMYDIA LABORATORY SURVEILLANCE

If untreated during pregnancy, chlamydia and gonorrhoea can be transmitted from mother to child around the time of birth. The most common presentation in infants is conjunctivitis, which occurs in 30–50% of infants born to mothers with chlamydia or gonorrhoea (Hammerschlag, 2011). These perinatal infections are preventable through antenatal STI screening and maternal treatment.

CHARACTERISTICS OF ALL PAEDIATRIC CHLAMYDIA CASES

The number of cases of chlamydia in infants increased in 2022 (56 cases) compared to 2021 (44 cases) (Table 9). The site of infection was the eye for all cases for whom a site of infection was reported (50 cases, 89%). The highest number of cases were reported in Māori infants in 2022 (24 cases, 43%), consistent with previous years. From 2021 to 2022, cases increased for Pacific infants (86% increase), European/Other infants (45% increase), and remained low and similar for Asian, MELAA and those of unknown ethnicity.

Table 9: Laboratory reported chlamydia among cases <1 year of age, by ethnicity, sex and site of infection: 2018–2022

	2018	2019	2020	2021	2022
Ethnicity					
Māori	25	36	29	21	24
Pacific	14	18	15	7	13
Asian	2	5	3	3	2
European/Other	13	23	10	11	16
MELAA	0	0	2	0	0
Unknown	20	4	2	2	1
Sex					
Female	32	45	29	27	31
Male	42	41	32	17	24
Site of Infection					
Eye	63	73	49	35	50
Unknown	11	13	12	9	6
Total	**74**	**86**	**61**	**44**	**56**

CHARACTERISTICS OF ALL PAEDIATRIC GONORRHOEA CASES

Paediatric gonorrhoea case numbers during 2022 were low and decreased from 2021 (Table 10). The highest number of cases continue to be reported among Māori infants (5 cases).

Table 10: Laboratory reported gonorrhoea by ethnicity, sex and site of infection: 2018–2022

	2018	2019	2020	2021	2022
Ethnicity					
Asian	0	0	2	0	0
European/Other	2	3	1	1	0
Māori	5	6	8	7	5
MELAA	1	0	0	1	0
Pacific	1	0	1	1	1
Unknown	0	0	0	0	0
Sex					
Female	6	4	9	7	4
Male	3	5	3	3	2
Site of Infection					
Eye	9	8	10	8	4
Unknown	0	1	2	2	2
Total	**9**	**9**	**12**	**10**	**6**

GENITAL WARTS

Prior to 2022, data on the first presentation of genital warts was reported to ESR by sexual health and Family Planning clinics across New Zealand. In 2022, genital warts surveillance shifted to a sentinel surveillance approach, focusing on data from eleven high-volume sexual health clinics across New Zealand which historically reported the majority of New Zealand's genital warts cases.

Genital warts surveillance helps monitor the impact of the vaccination for human papillomavirus (HPV). HPV is implicated in the development of genital warts, ano-genital and head and neck cancers. HPV vaccination has been part of the national immunisation programme for girls aged 12 years since 2008 and was extended to include boys aged 12 years from 2017. The HPV vaccine may be offered from nine years of age but is usually given at age 11–12 years of age. (Ministry of Health, 2021). Table 11 shows the characteristics of genital warts cases between 2018–2022, from the eleven sexual health clinics participating in genital warts surveillance.

Table 11: Characteristics of first presentation genital warts cases in sentinel clinics by sex, age, ethnicity, and region: 2018–2022

Year	2018, N = 848[1]	2019, N = 707[1]	2020, N = 678[1]	2021, N = 572[1]	2022, N = 420[1]
Sex					
Female	315(37%)	261(37%)	227(33%)	217(38%)	158(38%)
Male	532(63%)	446(63%)	451(67%)	355(62%)	260(62%)
Unknown/Other	1(0%)	0(0%)	0(0%)	0(0%)	2(0%)
Age Group					
0–14	0(0%)	0(0%)	0(0%)	2(0%)	0(0%)
15–19	49(6%)	36(5%)	29(4%)	16(3%)	5(1%)
20–24	220(26%)	178(25%)	174(26%)	130(23%)	64(15%)
25–29	228(27%)	163(23%)	173(26%)	133(23%)	102(24%)
30–39	195(23%)	172(24%)	174(26%)	155(27%)	131(31%)
40+	156(18%)	156(22%)	128(19%)	136(24%)	118(28%)
Unknown	0(0%)	2(0%)	0(0%)	0(0%)	0(0%)
Ethnicity					
European/Pakeha	566(67%)	428(61%)	458(68%)	358(63%)	257(61%)
Māori	127(15%)	110(16%)	75(11%)	80(14%)	60(14%)
Other	126(15%)	129(18%)	100(15%)	103(18%)	68(16%)
Pacific Peoples	18(2%)	30(4%)	32(5%)	23(4%)	26(6%)
Unknown	11(1%)	10(1%)	13(2%)	8(1%)	9(2%)
Geographical Region					
Auckland	314(37%)	265(37%)	262(39%)	191(33%)	215(51%)
Christchurch	120(14%)	101(14%)	91(13%)	78(14%)	38(9%)
Dunedin	28(3%)	35(5%)	24(4%)	20(3%)	8(2%)
Hamilton	97(11%)	86(12%)	96(14%)	68(12%)	27(6%)
Hastings	22(3%)	13(2%)	19(3%)	19(3%)	1(0%)
Nelson	65(8%)	45(6%)	37(5%)	65(11%)	24(6%)
New Plymouth	26(3%)	29(4%)	40(6%)	32(6%)	19(5%)
Palmerston North/Levin/Dannevirke	4(0%)	10(1%)	5(1%)	5(1%)	17(4%)
Rotorua	11(1%)	10(1%)	18(3%)	35(6%)	0(0%)
Tauranga	75(9%)	38(5%)	44(6%)	42(7%)	31(7%)
Wellington	86(10%)	75(11%)	42(6%)	17(3%)	40(10%)

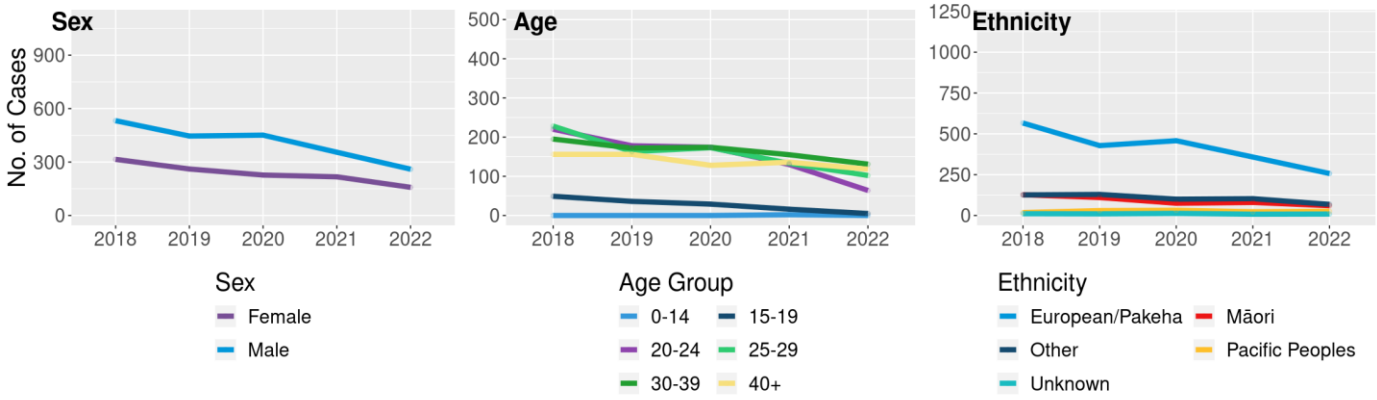
[1] n(%)
[2] Individuals with unknown age were excluded from the denominator when calculating the proportion of genital warts cases by age group

The number of first presentation of genital warts cases reported in 2022 declined by 152 cases (26.6%) compared to 2021, a more marked decline than seen in the previous year (15.6% in 2021 compared to 2020). This decrease extends the downwards trend in genital warts cases observed since 2017, and likely reflects the impact of HPV vaccination among youth. An increase was observed for the larger urban regions of Auckland (191 to 215), and Wellington (17 to 40), and a decrease for Christchurch (78 to 38), and Hamilton (68 to 27).

Genital warts by sex, age, and ethnicity

- Males continued to be overrepresented in genital warts cases in 2022 (62% of all cases) despite a 26.8% reduction from cases reported in 2021. Total cases reported for females decreased by 27.2% (Figure 14).
- Case numbers decreased for all age groups between 2021 and 2022.
- Case numbers declined for European/Pakeha (28.2%), Māori (25%) and Other (34.0%) ethnicity groups, however, increased slightly for Pacific peoples (13.0% increase).

Figure 14: Genital warts cases by sex, age-group, and ethnicity: 2018–2022



CLINIC SURVEILLANCE OF LYMPHOGRANULOMA VENEREUM (LGV)

One case of LGV was reported in 2022 in Auckland who was MSM. This compares to one case reported in 2021, two cases in 2020, and seven cases in 2019. Please see previous annual reports for further details.

INEQUITIES ANALYSIS

Inequities are differences in health that are avoidable, unfair, and unjust. “Equity recognises different people with different levels of advantage require different approaches and resources to get equitable health outcomes.” (Ministry of Health, 2019)

Describing inequities is a crucial first step to eliminating them. Inequities in STIs are likely to reflect differences in access to sexual health care and sexual network characteristics, rather than sexual behaviour alone. Health inequities in STIs in Aotearoa New Zealand are evident in the disproportionately high rates of STIs observed for Māori, Pacific, young people, and MSM. In communities in which there is higher prevalence of a particular STI, with each sexual encounter there is a greater chance of contact with someone with an infection than in lower prevalence communities (CDC, 2019). Differences persist in communities because access to quality and culturally safe STI prevention and treatment has not been equitably available. Higher rates of STIs in ethnic groups known to have inequitable access to the determinants of health, including health care access, are observed around the world, including in African American communities and Aboriginal Australians (CDC, 2019) (The Kirby Institute, 2018).

Ngā Pokenga Paipai Me Ngā Pokenga Huaketo Mā Te Toto: Te Rautaki O Aotearoa, the Aotearoa New Zealand Sexually Transmitted and Blood Borne Infection Strategy 2023–2030 was published in March 2023 (Ministry of Health, 2023). This strategy gives effect to the principles of Te Tiriti o Waitangi as a legal requirement and takes an equity first approach to address ongoing disparities. (Ministry of Health, 2023) The goals of the strategy are to:

1. reduce incidence of sexually transmitted and blood borne infections (STBBI) in Aotearoa New Zealand and eliminate congenital syphilis, hepatitis C and transmission of HIV
2. decrease mortality and the negative health and wellbeing outcomes of STBBI, including stigma and discrimination
3. improve Māori health and wellbeing in relation to STBBI through delivery on Te Tiriti o Waitangi obligations
4. increase equity in relation to all STBBI goals and objectives (Ministry of Health, 2023)

Until specific indicators are developed, this report will assess progress against the goals to reduce the incidence of STIs, eliminate congenital syphilis, and increase equity for the Strategy’s priority groups where possible; Māori, Pacific, young people aged under 29, MSM and sex workers. (Ministry of Health, 2023)

STBBI Strategy goal 1: Reduce incidence of STBBI and eliminate congenital syphilis

The incidence of syphilis and gonorrhoea increased between 2021 and 2022, while the incidence of chlamydia remained stable. The incidence of each of these infections remains lower than the peak for syphilis (recorded in 2019) and for gonorrhoea (recorded in 2020), and the stable higher chlamydia rate observed from 2016 to 2019. However, it is important to note that infection rates likely underestimate the true burden of disease as testing rates for chlamydia and gonorrhoea remain lower the prior to the COVID-19 pandemic.

The rate of congenital syphilis, 14 per 100,000 live births, increased from 2021 to 2022, and is at the highest level seen, equal to the rate seen in 2020.

In contrast, the number of notifications of first episode genital warts from sentinel clinics have continued to decrease.

STBBI strategy goal 3: Improve Māori health and wellbeing through delivery on Te Tiriti o Waitangi obligations

Inequities for Māori continue to increase, with the differences in syphilis, gonorrhoea, and chlamydia rates between Māori and NZ European/other increasing. Rates among Māori compared to those among NZ European/other and Asian people were 3 times higher for syphilis and gonorrhoea and 3.5 times higher for chlamydia. Numbers of syphilis cases detected in pregnancy increased for Māori in 2022 compared to 2021 while they decreased in NZ European/other. In 2022, seven of eight reported congenital syphilis cases were among Māori infants, and rates of congenital syphilis among Māori were 40 per 100,000 live births in 2022, the highest rates ever seen, and approaching the WHO elimination level of 50 per 100,000 live births. The highest numbers of chlamydia and gonorrhoea eye infections also continue to be notified in Māori infants (43% of chlamydia eye infections and five out of six gonorrhoea eye infections). These infections in infants demonstrate inequitable access to appropriate antenatal care and sexual health care for Māori.

STBBI strategy goal 4: Increase equity for other priority groups

Inequities for Pacific peoples likewise continue to increase with the differences in syphilis, gonorrhoea, and chlamydia rates between Pacific and NZ European/other increasing. Rates among Pacific compared to those among NZ European/other people were 3 times higher for syphilis, 5 times higher for gonorrhoea and 3.5 times higher for chlamydia. Numbers of syphilis cases reported in pregnancy increased for Pacific in 2022 compared to 2021 while decreasing in NZ European/other. One of 8 congenital syphilis cases, one of 6 gonorrhoea eye infections, and 24% of chlamydia eye infections were notified in Pacific infants in 2022.

Inequities for young people continue, with rates of syphilis and gonorrhoea highest among those aged 20–29, and rates of chlamydia highest among those aged 15–24. Syphilis rates among those aged 20 to 24 and 15 to 19 increased between 2021 and 2022, and rates among those aged 25 to 29 remaining stable. Gonorrhoea rates increased among age groups between 15 and 29, with the greatest increase seen in the 20-to-24-year group. In contrast, chlamydia rates decreased across groups aged between 15 and 29.

An ongoing decrease in rates of syphilis among MSM has been seen since the peak in 2019, but rates among MSM continue to be markedly higher than those among MSW, 60 times higher in 2022. While rates have declined compared to 2021, inequities for MSM also continue to be seen in gonorrhoea rates, with rates 39 times those among MSW. While sexual behaviour information is not currently available for chlamydia, there are known barriers to gay and bisexual men accessing sexual health care, with many reporting being unable to discuss sexual health concerns, or their sexual orientation, with their GPs (Ludlam, 2015).

Numbers of cases of syphilis and gonorrhoea who reported being sex workers were higher in 2022 than 2021, but lower than 2019. Interpretation of this data is limited by low numbers, and an unknown denominator. In addition, ongoing stigma and discrimination experienced by sex workers may affect reporting of this information to clinicians.

REFERENCES

1. CDC. (2019). *Sexually transmitted Disease Surveillance 2019*. Retrieved from National Overview - Sexually Transmitted Disease Surveillance, 2019: https://www.cdc.gov/std/statistics/2019/overview.htm
2. Clark, T. L. (2020). *Youth19 Tangatahi Smart Survey, Initial Findings: Sexual and reproductive health of New Zealand secondary school students.* The University of Auckland and Victoria University of Wellington, The Youth19 Research Group. Retrieved from https://static1.squarespace.com/static/5bdbb75ccef37259122e59aa/t/5fbac2c9b41d97178886e285/1606075090004/Youth19+Sexual+and+Reproductive+Health+Report.pdf
3. Hammerschlag, M. (2011). Chlamydial and gonococcal infections in infants and children. *Clinical infectious diseases, 53*(Suppl 3), S99-S102.
4. Ludlam, A. S. (2015). General practitioner awareness of sexual orientation among a community and internet sample of gay and bisexual men in New Zealand. *J Prim Health Care, 7*, 204-12.
5. Ministry of Health. (2019, October). *Ministry of Health: Achieving Equity*. Retrieved from The definition: https://www.health.govt.nz/about-ministry/what-we-do/work-programme-2019-20/achieving-equity
6. Ministry of Health. (2019). *Sexual Orientation: Findings from the 2014/15 New Zealand Health Survey.* Retrieved from https://www.health.govt.nz/system/files/documents/publications/sexual-orientation-findings-from-the-2014-15-new-zealand-health-survey-jan20.pdf
7. Ministry of Health. (2021). draft: Aotearoa New Zealand Sexually Transmitted and Blood Borne Infection Strategy 2022 - 2032 Ngā Pokenga Paipai me Ngā Pokenga Huaketo mā te Toto: Te Rautaki o Aotearoa.
8. Ministry of Health. (2021). *HPV Immunisation Programme*. Retrieved from Immunisation: https://www.health.govt.nz/our-work/preventative-health-wellness/immunisation/hpv-immunisation-programme
9. Ministry of Health. (2021). *Report on Maternity: further information.* Retrieved from https://www.health.govt.nz/system/files/documents/publications/report-on-maternity-further-information-dec21.pdf
10. Ministry of Health. (2023). *Ngā Pokenga Paipai Me Ngā Pokenga Huaketo Mā Te Toto: Te Rautaki O Aotearoa 2023–2030 | Aotearoa New Zealand Sexually Transmitted and Blood Borne Infection Strategy 2023–2030.* Wellington: Ministry of Health.
11. Morris. (2012). *STI report.*
12. New Zealand Sexual Health Society. (2020, September). *Syphilis in Pregnancy: Antenatal Management Guidelines for maternal and congenital syphilis.* Retrieved from The New Zealand Sexual Health Society Incorporated: https://www.nzshs.org/docman/guidelines/management-of-sexual-health-conditions/syphilis/syphilis-in-pregnancy/397-syphilis-in-pregnancy-v1-sep-2020/file
13. PHARMAC. (2021). *PrEP for HIV prevention: emtricitabine with tenofovir disoproxil fumarate*. Retrieved from https://pharmac.govt.nz/medicine-funding-and-supply/medicine-notices/prep-for-hiv-prevention-emtricitabine-with-tenofovir-disoproxil-fumarate/
14. Saxton, P. M. (2021). Population rates of HIV, gonorrhoea and syphilis diagnoses by sexual orientation in New Zealand. *Sex Transm Infect*. doi:10.1136/sextrans-2021-055186
15. The Kirby Institute. (2018). *National update on HIV, viral hepatitis and sexually transmissible infections in Australia 2009 - 2019.* Retrieved from https://kirby.unsw.edu.au/report/national-update-hiv-viral-hepatitis-and-sexually-transmissible-infections-australia-2009-2018
16. Waitangi Tribunal. (2019). *Hauora; Report on Stage One of the Health Services and Outcomes*

Kaupapa Inquiry. Legislation Direct. Retrieved from https://forms.justice.govt.nz/search/Documents/WT/wt_DOC_152801817/Hauora%20W.pdf

17. Ward. (n.d.).
18. World Health Organization. (2021). *Global guidance on criteria and processes for validation: elimination of mother-to child transmission of HIV, syphilis and hepatitis B virus.* Geneva: World Health Organization.

APPENDIX 1: ADDITIONAL TABLES

REASON FOR SYPHILIS TEST BY SEXUAL BEHAVIOUR: 2022

Table 12: Reason for test amongst infectious syphilis cases by sexual behaviour in New Zealand: 2022

Reason for test	MSM	MSW	Other	Unknown	WSM
Asymptomatic screening including PrEP	87 (39.19%)	15 (10.9%)			16 (16%)
Clinical symptoms/suspicion	86 (38.74%)	75 (54.3%)	2 (40%)	8 (38.1%)	31 (31%)
Contact of STI/HIV	8 (3.60%)	6 (4.3%)		1 (4.8%)	4 (4%)
Immigration	2 (0.90%)	2 (1.4%)		1 (4.8%)	
Other	13 (5.86%)	9 (6.5%)	1 (20%)	5 (23.8%)	11 (11%)
Syphilis Contact	20 (9.01%)	31 (22.5%)	1 (20%)	2 (9.5%)	9 (9%)
Unknown	6 (2.70%)			1 (4.8%)	1 (1%)
Antenatal screening			1 (20%)	3 (14.3%)	28 (28%)

INFECTIOUS SYPHILIS CASES BY ETHNICITY, COUNTRY OF INFECTION AND CLINICAL SETTING OF TEST: 2022

Table 13: Syphilis cases by ethnicity, country of infection and clinical setting of test in New Zealand: 2022

	MSM	MSW	WSM	Other	Unknown	Total
Ethnicity						
European/Other	90	56	25	3	7	181
Māori	54	45	54	1	9	163
Pacific	27	21	18	1	2	69
Asian	39	11	2		2	54
MELAA	8	5	1			14
Unknown	4				1	5
Country of Infection						
Australia	5	1				6
New Zealand	200	128	98	3	12	441
Other	9	4		1		11
Unknown	8	5	2	1	9	25
Clinical setting of initial syphilis test						
ED	4	3	7			14
General Practice	73	54	40	3	13	183
ID clinic	10	3				13
NGO clinic	5	3			1	9
Other/Unknown	11	9	9		4	33
Sexual Health clinic	119	61	25	2	1	208
Corrections		5	1		1	7
Antenatal clinic/midwife			12			12
Obstetric Ward			5		1	6
Total	**222**	**138**	**100**	**5**	**21**	**486**

INFECTIOUS SYPHILIS CO-INFECTIONS BY SEXUAL BEHAVIOUR: 2022

Table 14: Infectious syphilis cases and co-infections by sexual behaviour: 2022

	MSM	MSW	WSM	Other	Unknown	Total
Chlamydia	56	22	29	1	0	108
Gonorrhoea	38	11	10	0	1	60
Trichomoniasis	0	1	12	1	0	14
Genital Herpes	4	1	0	0	0	5
Genital Warts	2	2	0	0	0	4
Mycoplasma Genitalium	0	0	0	0	0	0
NSU	3	0	0	0	0	3
LGV	0	0	0	0	0	0

INFECTIOUS SYPHILIS: NUMBER OF PARTNERS IN PAST 3 MONTHS BY SEXUAL BEHAVIOUR: 2022

Table 15: Number of partners in past three months by sexual behaviour of case and sex of partner: 2022

	MSM	MSW	WSM	Total
No. of male partners				
0	9	52	3	64
1	57	5	64	126
2–4	77	11	22	110
5–9	27	1	1	29
10–15	26	2	1	29
>15	10	1	0	11
Unknown	16	66	9	91
No. of female partners				
0	93	18	40	151
1	9	56	3	68
2–4	6	36	0	42
5–9	2	4	0	6
10–15	1	0	0	1
>15	0	0	0	0
Unknown	111	24	57	192

GONORRHOEA: NUMBER OF PARTNERS IN PAST 3 MONTHS BY SEXUAL BEHAVIOUR: 2022

Table 16: Number of partners in past three months by sexual behaviour of case and sex of partner: 2022

	MSM	MSW	WSM	Total
No. of male partners				
0	27	546	8	581
1	148	26	521	695
2–4	357	29	308	694
5–9	183	16	49	248
10–15	124	10	12	146
>15	51	4	17	72
Unknown	50	261	54	365
No. of female partners				
0	651	63	689	1,403
1	55	326	29	410
2–4	51	346	10	407
5–9	10	48	1	59
10–15	2	22	1	25
>15	1	8	0	9
Unknown	170	79	239	488
Total	**940**	**892**	**969**	**2,801**

APPENDIX 2: DESCRIPTION OF STI SURVEILLANCE AND METHODOLOGY

ESR undertakes sexually transmitted infection (STI) surveillance on behalf of the Ministry of Health. The purposes on New Zealand STI surveillance system are:

- 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, and
- to evaluate the effectiveness of policies and programmes.

Before the Health (Protection) Amendment Act 2016 came into force, STI surveillance comprised a combination of voluntary sentinel clinic surveillance from Sexual Health and Family Planning Clinics, enhanced syphilis surveillance from these clinics, and laboratory surveillance of chlamydia and gonorrhoea. Significant changes were made to the STI surveillance system after the Health (Protection) Amendment Act 2016 came into force in January 2017, making syphilis, gonorrhoea, HIV and AIDS notifiable to the Medical Officer of Health without identifying information (name, address and place of work), whereas previously only AIDS was notifiable. Because these diseases were the first to require notification without identifying information, there were substantial administrative difficulties designing and implementing a system which would integrate with the existing notifiable disease database EpiSurv. After significant delays, an interim solution was put in place from November 2018 using REDCap, a secure web application hosted on an ESR server, to collect data for syphilis, gonorrhoea and HIV in a survey format. This interim system remains in place. Each part of the system is described below.

REDCAP

REDCap is a secure web application hosted on an ESR server to collect notification/enhanced data for syphilis, gonorrhoea and HIV in a survey format. Sexual health clinic staff have individual logins to REDCap, managed by ESR. This means they can enter data and update information as required.

Gonorrhoea enhanced data can also be entered by non-sexual health clinic staff, such as general practitioners, by entering a generic survey website link which provides one-time access to a REDCap survey. Clinicians are directed to this link along with the positive laboratory result. Once the form is completed the clinician cannot access the form again.

Gonorrhoea case notifications entered into REDCap can be matched with laboratory data by NHI which provides an indication of how many cases are not notified (underreporting), and by comparing basic demographics, how representative notified cases are.

For syphilis, laboratory results are not automatically notified. Clinicians are directed to notify the case when a reactive laboratory result is received. Clinicians notify either using REDCap (sexual health clinics) or faxing a PDF (all other clinicians). Sexual health clinics and public health units can access all syphilis data in REDCap from within their own region only without identifying details. Most large sexual health clinics report accessing and auditing cases in REDCap; very few PHU's report accessing data in REDCap for surveillance purposes although this has changed somewhat in 2021 with support from ESR and reactivation of the syphilis action plan.

Syphilis cases diagnosed by clinicians outside a sexual health clinic are directed from the laboratory result to download a PDF from the ESR website and notify via fax. PDF forms can be completed either digitally or by hand. Faxes are received by ESR reception, automatically converted to a PDF email attachment and forwarded to a generic ESR Episurv support email. This is then forwarded to an ESR syphilis surveillance email address after which the PDF is printed, entered into REDCap and filed.

Limitations of REDCap data

Comparison of gonorrhoea laboratory and REDCap notifications in 2021 show that clinical notifications were made for just over half (3608/6458, 56%) of total positive cases. Approximately 15% of clinical notifications could not be matched to laboratory notifications, either because no NHI was provided or data entry errors. Analysis has shown that cases in Auckland and cases of Māori and Pacific ethnicity are underrepresented in clinical notifications. Representativeness with regard to sexual behaviour is unknown because this information is not collected for laboratory data.

Manual data entry to the REDCap forms and a large number of fields to complete, is likely to significantly contribute to underreporting.

Likewise, syphilis notifications are often incomplete. Because there is no laboratory reporting of syphilis, the degree of underreporting at a national level is currently unknown but there is no reason to assume this is much different from gonorrhoea notification. There is often requirement for follow up by ESR to determine the case definition. Long complex case report forms with multiple manual steps for access and data entry are a significant issue for clinicians and for the quality of surveillance data.

The numbers reported in this report reflect those in REDCap on date of extraction. As this surveillance database can be updated by clinicians at any time, the counts and rates presented here may differ from those included in previous reports.

LABORATORY DATA

All laboratories in NZ have provided all positive and negative test results for chlamydia and gonorrhoea monthly since 2015. Demographic information, individual identifiers (NHI or provisional individual identifier), and site of infection are provided with the laboratory results. Antimicrobial resistance (AMR) data is received from some but not all laboratories and hence incomplete. For further information about gonococcal AMR the latest AMR survey is available here.

Test results are received via excel spreadsheets into a portal, cleaned using R scripts and housed in SQL servers. Once cleaned, they are sent to the Ministry to be matched by NHI for ethnicity. This enables identification of all negative and positive results, duplicate results, testing coverage, proportion positive and reinfections by age, sex, region, and ethnicity. Identification of duplicate results by NHI ensure only one positive result is counted for each episode, and multiple tests and episodes for the same person can be identified over time.

Table 17: Time period to identify duplicate tests to determine one episode/case

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 <=21 days after the previous positive test (it does not matter if previous positive test was a NAAT or culture)

Limitations of laboratory data

Approximately 7% of laboratory notifications are missing NHI, and therefore cannot be matched to ethnicity. Although all laboratories report chlamydia and gonorrhoea tests and results, only a proportion of laboratories report AMR testing and results for gonorrhoea. ESR has no insight on how the proportion of reported AMR test results has been selected, and no AMR data are available for much of the country. Therefore, information on AMR collected is not generalizable.

SENTINEL CLINIC DATA

Annually, collaborating sentinel Sexual Health clinics manually extract data and provide aggregate data to ESR via excel spreadsheets. This includes the total number of clinic consultations for lymphogranuloma venereum and first episode genital warts by age, sex, ethnicity and sexual behaviour where available.

In November 2018, sentinel enhanced syphilis surveillance ceased as the notification system using REDCap was implemented, and in January 2019, clinic collection of chlamydia and gonorrhoea ceased.

Generalisability of clinic data

Clinics participating in STI sentinel surveillance are located in cities and some larger rural towns. First episodes of genital warts are also be seen in other sexual health clinics, Family Planning clinics and General Practitioners. The sentinel clinic surveillance data can provide an alert for changes occurring in the wider population.

Limitations of clinic data

Methods for data extraction and data quality and completeness vary by clinic and will depend on coding completeness. Manual processes for data extraction, aggregation, entry and transfer using excel spreadsheets and email introduces potential for errors. The representativeness of the data is unknown as there is no sample strategy.

ANALYTIC METHODS

Numerator data

- Gonorrhoea positive cases (episodes): the total number of laboratory-confirmed cases [Table 13] reported after exclusion of repeat tests for an individual within a defined episode period.
- Chlamydia positive cases (episodes): the total number of laboratory-confirmed cases reported after exclusion of repeat tests for an individual within a defined episode period.
- Gonorrhoea positive test: the total of all positive results for gonorrhoea regardless of type of test, specimen type or time in-between test (not deduplicated).
- Chlamydia positive test: the total of all positive results for chlamydia regardless of specimen type or time in-between test (not deduplicated).
- Number of syphilis cases by sexual behaviour: the number of cases reported by sexual behaviour.

Denominator data

- New Zealand population by ethnicity: the proportion of people in each ethnic group from the 2018 Census ‘usually resident population’ applied to the 2021 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.
- Estimated New Zealand population by sexual behaviour: The denominator for MSM was

calculated by multiplying the male population between 16 and 74 years of age (by the proportion of MSM estimated by the health survey 2014/2015 (2.6%). The remaining 97.4% of the male population between 16 and 74 was considered to be MSW and for women, the entire female population between 16 and 74 was considered WSM.

Rates calculations:

- General: Calculating rates from fewer than five cases produces rates that are unstable for the purpose of comparison and are therefore not calculated. Caution is also advised when interpreting and comparing rates based on fewer than 20 cases. It is important when interpreting the results to consider the size of the risk group in the denominator, since rates calculated in smaller groups can have wide confidence intervals. Prioritised ethnicity is provided by the Ministry of Health using NHI number provided by the laboratories. Where NHI is not provided, ethnicity is described as 'unknown'.
- 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.
- Rate of syphilis by sexual behaviour: the reported number of cases by sexual behaviour was divided by the estimated NZ population by sexual behaviour and multiplied by 100,000 for a rate of syphilis per 100,000 population.
- Rate of gonorrhoea by sexual behaviour: the proportion of cases by sexual behaviour from clinical notifications is applied to laboratory notifications, divided by the estimated NZ population by sexual behaviour and multiplied by 100,000 for a rate of gonorrhoea per 100,000 population.

Age groups

For this publication we have adopted the age groups that are also used by the Kirby Institute to present Australian data: 0–14, 15–19, 20–24, 25–29, 30–39, 40+. Several different age groupings have been used previously across different New Zealand publications. Following the Australian data will allow us to directly compare by age groups to Australia. It provides for more detail at ages for which numbers are much higher. It is limited to six age categories, which gives enough detail and makes the graphs look clearer than with more age categories. However, it does result in loss of detail at higher ages and these data can be requested as needed.

Science for Communities
He Pūtaiao, He Tāngata

INSTITUTE OF ENVIRONMENTAL
SCIENCE AND RESEARCH LIMITED

Kenepuru Science Centre
34 Kenepuru Drive, Kenepuru, Porirua 5022
PO Box 50348, Porirua 5240
New Zealand
T: +64 4 914 0700 **F:** +64 4 914 0770

Mt Albert Science Centre
120 Mt Albert Road, Sandringham, Auckland 1025
Private Bag 92021, Auckland 1142
New Zealand
T: +64 9 815 3670 **F:** +64 9 849 6046

NCBID – Wallaceville
66 Ward Street, Wallaceville, Upper Hutt 5018
PO Box 40158, Upper Hutt 5140
New Zealand
T: +64 4 529 0600 **F:** +64 4 529 0601

Christchurch Science Centre
27 Creyke Road, Ilam, Christchurch 8041
PO Box 29181, Christchurch 8540
New Zealand
T: +64 3 351 6019 **F:** +64 3 351 0010

www.esr.cri.nz