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SEXUALLY TRANSMITTED INFECTIONS IN NEW ZEALAND: SUPPLEMENTARY ANNUAL SURVEILLANCE REPORT 2020

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

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INTRODUCTION

The ‘Sexually transmitted infections in New Zealand: Supplementary Annual Surveillance Report’ summarises additional epidemiology of sexually transmitted infections (STIs) for 2020 (the reporting period) not shown on the dashboard, with findings from 2016 to 2019 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.

While sentinel clinic surveillance for first presentation genital warts, first presentation genital herpes, non-specific urethritis, lymphogranuloma venereum (LGV), chancroid and granuloma inguinale continued through this reporting period, based on feedback from stakeholders on the usefulness of this information, only first presentation genital warts and LGV data are described in this report. Data on other STIs are also available on request.

The COVID-19 pandemic response affected behavioural patterns, access to healthcare and availability of testing in 2020, therefore all data from 2020 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 Health Board (DHB) except for Auckland which is reported as a region (combining Auckland, Waitemata and Counties Manukau DHB's) and Wellington which is reported as a region (combining Capital & Coast, Hutt Valley and Wairarapa DHB's).

Ethnicity:

Generally reported using prioritised ethnicity including Māori, Pacific, Asian, MELAA (Middle East, Latin America, and Africa), 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 2020 supplementary annual report with data from 2016 to 2019 generally reported to provide context and trends. Clinical notification data for gonorrhoea is only presented for 2019 and 2020 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 Sexual Health and Family Planning clinics for a group of other STI. As noted above, only first presentation genital warts and LGV data are described in this report

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

INFECTIOUS SYPHILIS

Syphilis data was previously reported via voluntary sentinel surveillance from sexual health clinics from 2013 to late 2018. In 2017, syphilis became notifiable, and an interim system was available from late 2018. This may have increased the number of cases reported and influenced trends.

CHARACTERISTICS OF ALL SYPHILIS CASES

Table 1: Infectious syphilis cases by year and sexual behaviour, age-group, ethnicity and region: 2016–2020

	2016, N = 320[1]	2017, N = 476[1]	2018, N = 628[1]	2019, N = 723[1]	2020, N = 512[1]
Sexual Behaviour					
MSM	236(73.8%)	319(67.0%)	415(66.1%)	455(62.9%)	289(56.4%)
MSW	52(16.2%)	87(18.3%)	113(18.0%)	143(19.8%)	113(22.1%)
WSM	26(8.1%)	61(12.8%)	87(13.9%)	91(12.6%)	90(17.6%)
Other	3(0.9%)	4(0.8%)	3(0.5%)	4(0.6%)	2(0.4%)
Unknown	3(0.9%)	5(1.1%)	10(1.6%)	30(4.1%)	18(3.5%)
Age Group					
0–14	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)
15–19	6(1.9%)	14(2.9%)	13(2.1%)	16(2.2%)	19(3.7%)
20–24	42(13.1%)	63(13.2%)	93(14.8%)	119(16.5%)	79(15.5%)
25–29	64(20.0%)	100(21.0%)	122(19.4%)	154(21.3%)	109(21.4%)
30–39	91(28.4%)	133(27.9%)	176(28.0%)	225(31.1%)	161(31.6%)
40+	117(36.6%)	166(34.9%)	224(35.7%)	209(28.9%)	142(27.9%)
Unknown[2]	0(0.0%)	0(0.0%)	0(0.0%)	0(0.0%)	2(0.0%)
Ethnicity					
European/Other	178(55.6%)	268(56.3%)	338(53.8%)	399(55.3%)	241(47.1%)
Māori	52(16.2%)	96(20.2%)	151(24.0%)	144(19.9%)	112(21.9%)
Pacific	24(7.5%)	29(6.1%)	41(6.5%)	56(7.8%)	53(10.4%)
Asian	46(14.4%)	63(13.2%)	70(11.1%)	80(11.1%)	63(12.3%)
MELAA	19(5.9%)	17(3.6%)	24(3.8%)	33(4.6%)	31(6.1%)
Unknown	1(0.3%)	3(0.6%)	4(0.6%)	11(1.5%)	12(2.3%)
Geographical Region					
Auckland	207(64.7%)	261(54.8%)	321(51.1%)	279(38.6%)	216(42.2%)
Canterbury	23(7.2%)	24(5.0%)	53(8.4%)	98(13.6%)	54(10.5%)
Wellington	20(6.2%)	66(13.9%)	52(8.3%)	95(13.2%)	79(15.4%)
Waikato	26(8.1%)	14(2.9%)	45(7.2%)	49(6.8%)	46(9.0%)
Southern	4(1.2%)	17(3.6%)	12(1.9%)	49(6.8%)	32(6.2%)
Bay of Plenty	8(2.5%)	25(5.3%)	44(7.0%)	48(6.6%)	23(4.5%)
Lakes	14(4.4%)	17(3.6%)	17(2.7%)	21(2.9%)	18(3.5%)
MidCentral	11(3.4%)	14(2.9%)	20(3.2%)	15(2.1%)	10(2.0%)
Hawkes Bay	2(0.6%)	11(2.3%)	9(1.4%)	18(2.5%)	6(1.2%)
Taranaki	0(0.0%)	7(1.5%)	14(2.2%)	12(1.7%)	5(1.0%)
Whanganui	1(0.3%)	9(1.9%)	13(2.1%)	16(2.2%)	5(1.0%)
Nelson Marlborough	2(0.6%)	4(0.8%)	9(1.4%)	4(0.6%)	5(1.0%)
Northland	1(0.3%)	2(0.4%)	10(1.6%)	13(1.8%)	6(1.2%)
Tairawhiti	0(0.0%)	4(0.8%)	7(1.1%)	3(0.4%)	4(0.8%)
West Coast	0(0.0%)	0(0.0%)	1(0.2%)	3(0.4%)	1(0.2%)
South Canterbury	1(0.3%)	1(0.2%)	1(0.2%)	0(0.0%)	2(0.4%)

[1] n(%)
[2] Individuals with unknown ages were excluded from the denominator when calculating the proportion of syphilis cases.

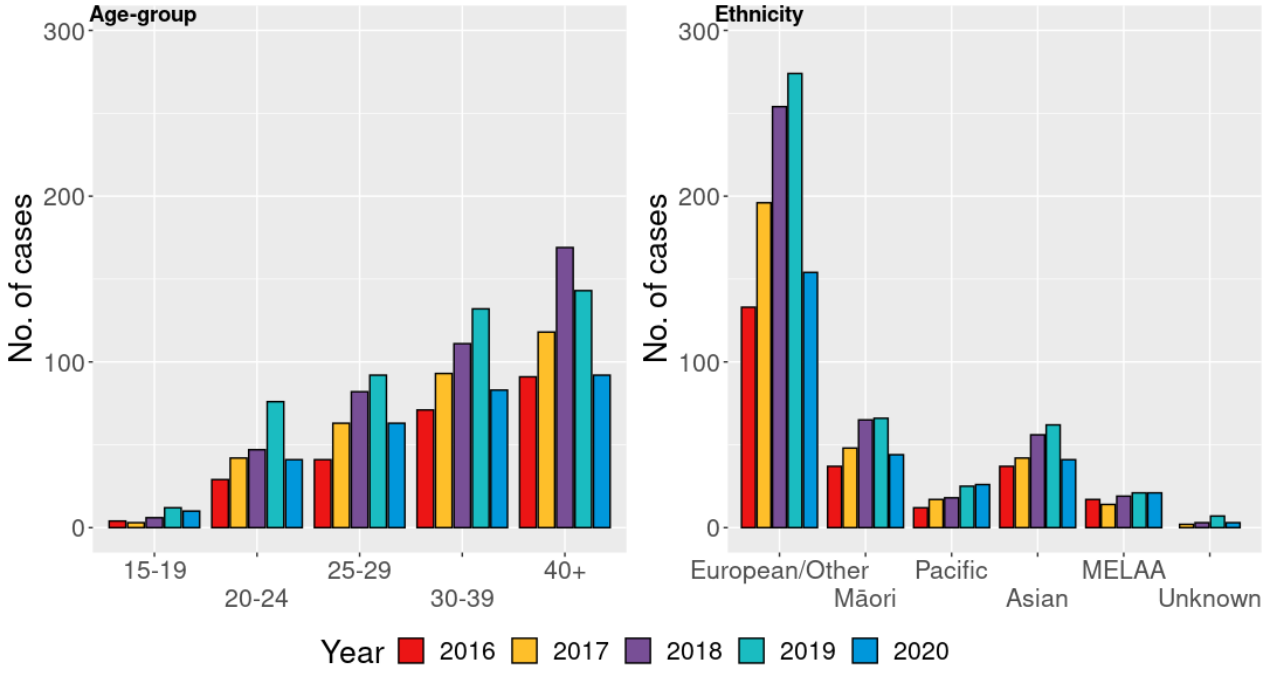
CASE COUNTS OF INFECTIOUS SYPHILIS IN DIFFERENT RISK GROUPS

MSM by age-group & ethnicity

Key findings

- The number of reported cases among MSM decreased across nearly all age-groups, ethnicity and geographic regions in 2020 [Figure 1]. The largest decrease was observed amongst those aged 20-24 years (46% decrease).
- Of cases among MSM, 71% were in the 'larger urban areas' (Auckland, Wellington and Canterbury regions) in 2020, consistent with previous years.
- The largest number of cases among MSM continue to be reported in the Auckland region (128 cases, 44%), followed by Wellington (42 cases, 15%), Canterbury (35 cases, 12%) and Waikato (31 cases, 11%).
- Bay of Plenty reported the largest decrease in MSM cases compared to 2019 (67%, 18 to 6 cases) and Canterbury decreased 55% (77 to 35 cases).
- Waikato reported an increase in cases in 2020 (27 to 31 cases).
- The majority of MSM cases were aged 30–39 years or 40+; this has been consistent since 2016.
- MSM cases decreased across all ethnicities in 2020 except in those of Pacific ethnicity. Those of European/Other ethnicity continue to represent the majority (51%) of MSM cases.
- Of all cases among MSM 15% were of Māori ethnicity and 14% of Asian ethnicity over the reporting period.

Figure 1: Infectious syphilis cases amongst MSM by age-group and ethnicity: 2016–2020

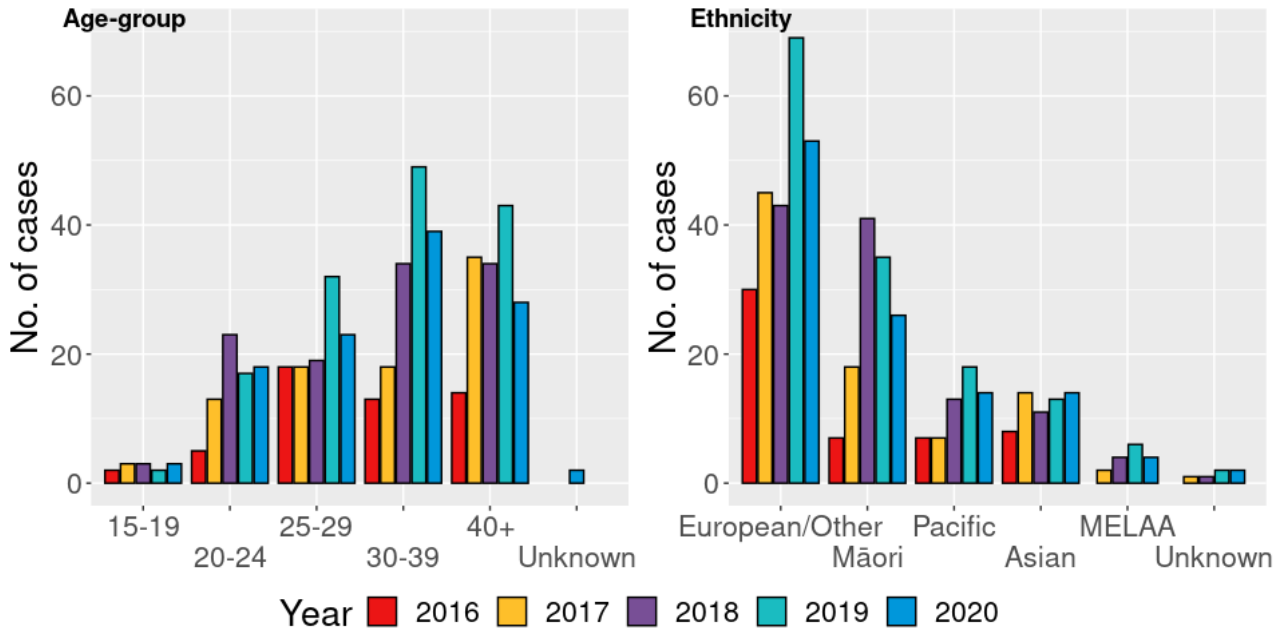


MSW by age-group & ethnicity

Key findings

- The number of infectious syphilis cases among men who have sex with women (MSW) decreased across most age-groups from 2019 to 2020 [Figure 2].
- Cases among MSW were predominantly in the 20–40+ year age-groups with very few cases reported <20 years of age.
- The largest decrease from 2019 to 2020 was amongst those aged 40+ (43 to 28 cases, 35% decrease) followed by those aged 25–29-years (32 to 23 cases, 28% decrease) and then 30–39 years (49 to 39 cases, 25% decrease).
- The number of cases among MSW decreased across all ethnicities from 2019 to 2020 except for people of Asian ethnicity among whom case numbers increased by one case.
- The highest number of cases were reported among people of European/Other ethnicity each year, followed by Māori and Pacific and Asian.
- The proportion of cases by ethnicity in 2020 remained steady compared with 2019 with those of European ethnicity 47% of all MSW cases, Māori 23% and Pacific and Asian both 12% in 2020.
- The highest number of cases by ethnicity and age-group in 2020 were reported amongst those of European/other ethnicity aged 30–39 years and 40+ years (15 and 17 of 113 cases) followed by those of Māori ethnicity aged 30–39 years (11/113 cases).
- Cases among MSW decreased across nearly all geographic regions from 2019 to 2020.
- The majority of MSW cases were reported in the Auckland region (46/113 cases) followed by the Wellington region (18/113 cases), Waikato (11/113 cases) and Canterbury (10/113 cases).

Figure 2: Infectious syphilis cases amongst MSW by age-group and ethnicity: 2016–2020

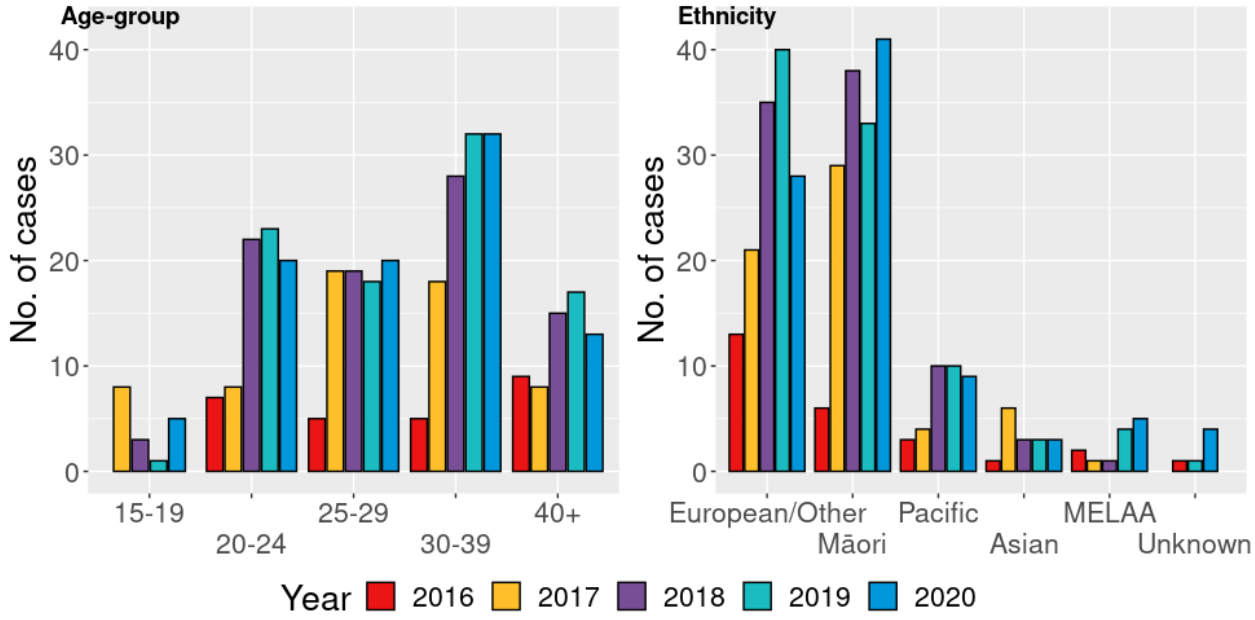


WSM by age-group & ethnicity

Key findings

- Cases of infectious syphilis among women who have sex with men (WSM) remained steady in 2020 [Figure 3].
- The vast majority of cases (>90%) among WSM were of reproductive age (defined by the Ministry of Health as aged 15–44 years (Ministry of Health, 2021)).
- Prior to 2017, most infectious syphilis cases among WSM were of European/other ethnicity [Figure 3]. However, the number and proportion of cases of Māori ethnicity has increased markedly. In 2020, 69/90 cases reported (77%) were of Māori (41/90 cases) or European/other (28/90 cases) ethnicity.
- In 2020, 37 of 90 cases (41%) among WSM were reported in Auckland and 18 of 91 cases (20%) were in the Bay of Plenty, Waikato and Lakes regions.
- From 2019 to 2020, cases increased in the Wellington region (five to 13 cases), decreased in Canterbury (nine to seven cases) and in most other smaller areas increased or decreased by one or two cases.
- The majority of WSM cases of European/other ethnicity in 2020 were reported in Auckland (15/28) compared to those of Māori ethnicity of which 12/41 were in Auckland, 9/41 were in Bay of Plenty and 7/41 were in the Wellington Region.

Figure 3: Infectious syphilis cases amongst WSM by age-group and ethnicity: 2016–2020



SPECIAL POPULATIONS WITH INFECTIOUS SYPHILIS

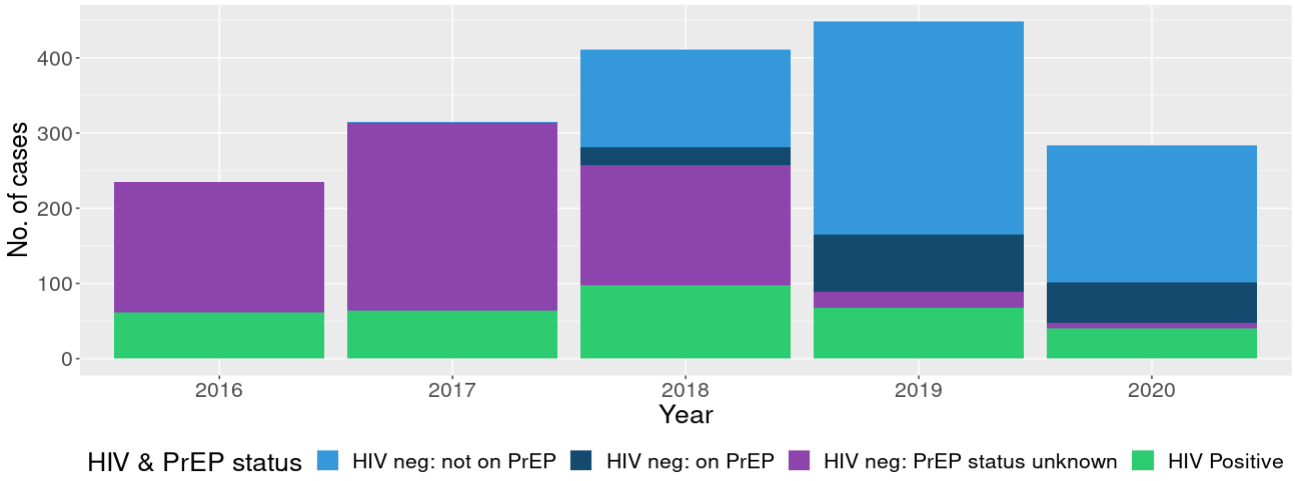
HIV & PrEP status amongst MSM

Pre-Exposure Prophylaxis (PrEP) is a medication for HIV-negative people which significantly reduces the chance of acquiring HIV. 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 MSM with syphilis in 2020, 40 were HIV positive (13.8%) [Figure 4]. This is the lowest number and proportion of HIV positive cases since 2016 when 61/236 cases (25.8%) were HIV positive.

PrEP status was known for 95% of syphilis cases amongst MSM in 2020. Of the 235 MSM syphilis cases with a known PrEP status, 53 (23%) were reported to be taking PrEP in 2020.

Figure 4: HIV and PrEP status amongst MSM with syphilis: 2016–2020



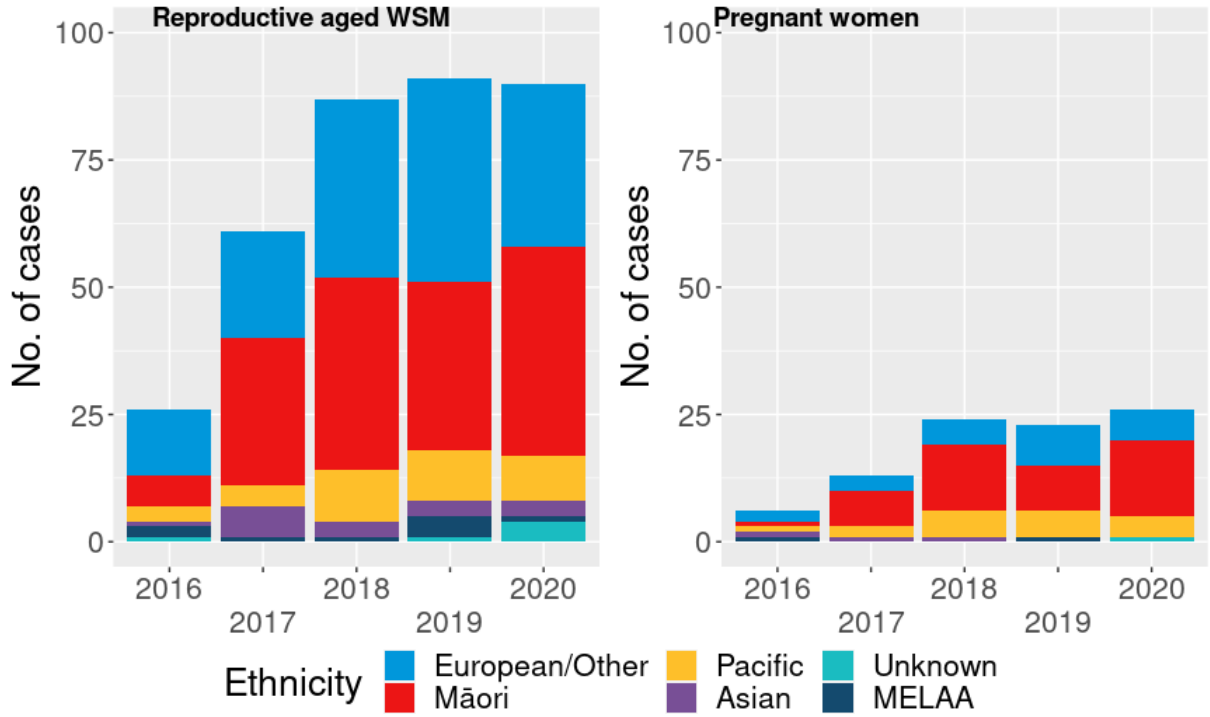
WSM of reproductive age and pregnant women

The number of WSM aged between 15–44 years remained steady in 2020 however ethnic disparities continued to increase. The number of cases amongst Māori women of reproductive age increased from 33 cases in 2019 to 41 cases in 2020 (28% increase) compared to those of European/other ethnicity which decreased from 40 to 32 cases (20% decrease) [Figure 5].

The number of syphilis cases amongst pregnant women increased from 23 cases in 2019 to 26 cases in 2020. Cases among most ethnicities remained steady except for among Māori which increased from nine cases in 2019 to 15 cases in 2020.

More than half of syphilis cases in pregnant women continue to be in the Auckland (7/26) and Lakes/Bay of Plenty/Waikato regions (8/26) while the remainder are in the north island, except for three cases reported in Canterbury.

Figure 5: WSM syphilis cases of reproductive age and pregnant women by ethnicity: 2016–2020

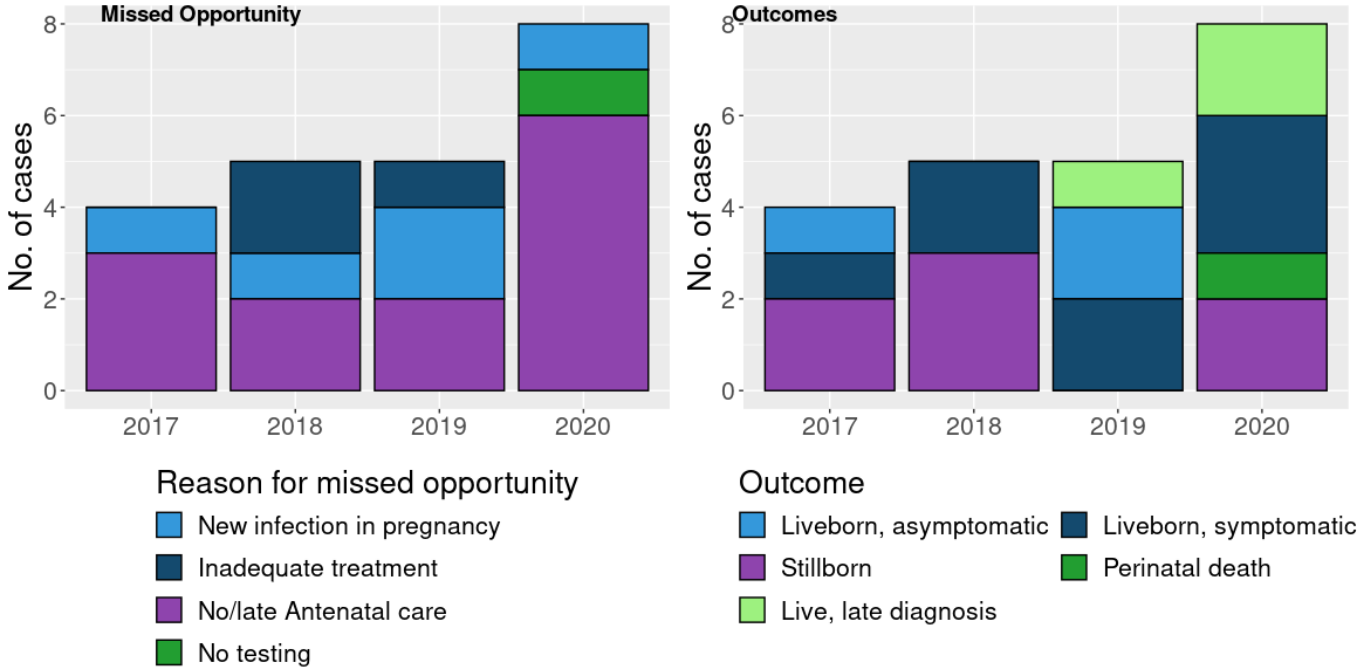


Congenital Syphilis

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. 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).

In 2020 the most common missed opportunity was access to antenatal care. In six of eight congenital syphilis cases, mothers had received no antenatal care and presented at the time of or after delivery; or received antenatal care and testing less than 4 weeks before delivery [Figure 6]. In one case, no testing was undertaken, despite the mother receiving antenatal care. In the remaining case, the mother's first antenatal test was negative, but her infant subsequently had congenital syphilis. In this case, syphilis infection was either incubating at the time of testing, or infection occurred later in pregnancy.

Figure 6: Congenital syphilis: missed opportunities to identify syphilis in pregnancy and outcomes of congenital syphilis cases: 2016–2020



Sex workers with infectious syphilis

The number and proportion of cases who report being sex workers decreased to nine cases (1.8%) in 2020 from 24 cases (3.3%) in 2019 [Table 2].

In 2020, the majority of cases who reported being sex workers were of European/other or Māori ethnicity, reported their sexual behaviour as WSM and were in Auckland. Due to low numbers no further analysis is provided.

Table 2: Sex worker status amongst infectious syphilis cases: 2016–2019

Sex Worker Status	2016	2017	2018	2019	2020
Case is a sex worker	5 (1.6%)	16 (3.4%)	19 (3.0%)	24 (3.3%)	9 (1.8%)
Case is not a sex worker	305 (95.3%)	442 (92.9%)	580 (92.4%)	633 (87.5%)	463 (90.4%)
Unknown	10 (3.1%)	18 (3.8%)	29 (4.6%)	66 (9.1%)	40 (7.8%)
Total	**320 (100.0%)**	**476 (100.0%)**	**628 (100.0%)**	**723 (100.0%)**	**512 (100.0%)**

CLINICAL NOTIFICATION SURVEILLANCE OF GONORRHOEA 2020

Clinical notifications for gonorrhoea have been collected since late 2018 [Table 3]. Clinic notifications have been received for a subset of laboratory confirmed cases (3738/7667, 49%).

Due to an ongoing data quality review of the gonorrhoea antimicrobial resistance (AMR) surveillance data, these data have not been included in this report. A standalone document on gonorrhoea AMR surveillance will be published once the review is complete.

CHARACTERISTICS OF ALL CLINICAL GONORRHOEA NOTIFICATIONS 2020

Table 3: Clinical gonorrhoea notifications by sexual behaviour and age, ethnicity and region: 2020

	MSM N = 922[1]	MSW N = 958[1]	Other N = 75[1]	Unknown N = 754[1]	WSM N = 1,029
Age Group					
0–14	0(0.0%)	3(0.3%)	10(13.5%)	3(0.4%)	7(0.7%)
15–19	20(2.2%)	62(6.5%)	6(8.1%)	68(9.1%)	139(13.6%)
20–24	158(17.2%)	201(21.1%)	16(21.6%)	172(23.1%)	296(29.0%)
25–29	201(21.9%)	223(23.4%)	11(14.9%)	168(22.5%)	226(22.1%)
30–39	304(33.1%)	287(30.1%)	21(28.4%)	213(28.6%)	253(24.8%)
40+	235(25.6%)	177(18.6%)	10(13.5%)	122(16.4%)	101(9.9%)
Unknown[2]	4 (0.4%)	5(0.5%)	1(1.3%)	8(1.1%)	7(0.7%)
Ethnicity					
European/Other	550(59.7%)	332(34.7%)	24(32.0%)	234(31.0%)	324(31.5%)
Māori	148(16.1%)	332(34.7%)	31(41.3%)	303(40.2%)	514(50.0%)
Pacific	58(6.3%)	164(17.1%)	9(12.0%)	125(16.6%)	138(13.4%)
Asian	119(12.9%)	92(9.6%)	8(10.7%)	44(5.8%)	37(3.6%)
MELAA	36(3.9%)	25(2.6%)	0(0.0%)	17(2.3%)	6(0.6%)
Unknown	11(1.2%)	13(1.4%)	3(4.0%)	31(4.1%)	10(1.0%)
Geographical Region					
Auckland	423(45.9%)	402(42.0%)	35(46.7%)	389(51.6%)	405(39.4%)
Canterbury	117(12.7%)	83(8.7%)	7(9.3%)	41(5.4%)	73(7.1%)
Wellington	173(18.8%)	66(6.9%)	3(4.0%)	70(9.3%)	64(6.2%)
Waikato	73(7.9%)	107(11.2%)	5(6.7%)	50(6.6%)	129(12.5%)
Southern	45(4.9%)	19(2.0%)	2(2.7%)	12(1.6%)	14(1.4%)
Bay of Plenty	20(2.2%)	79(8.3%)	3(4.0%)	29(3.8%)	73(7.1%)
Lakes	8(0.9%)	39(4.1%)	3(4.0%)	18(2.4%)	63(6.1%)
MidCentral	20(2.2%)	32(3.3%)	3(4.0%)	7(0.9%)	32(3.1%)
Hawke's Bay	2(0.2%)	31(3.2%)	4(5.3%)	49(6.5%)	41(4.0%)
Taranaki	4(0.4%)	25(2.6%)	2(2.7%)	16(2.1%)	30(2.9%)
Whanganui	11(1.2%)	6(0.6%)	1(1.3%)	8(1.1%)	15(1.5%)
Nelson Marlborough	12(1.3%)	11(1.1%)	1(1.3%)	21(2.8%)	16(1.6%)
Northland	10(1.1%)	32(3.3%)	1(1.3%)	17(2.3%)	36(3.5%)
Tairawhiti	4(0.4%)	21(2.2%)	5(6.7%)	27(3.6%)	37(3.6%)
West Coast	0(0.0%)	1(0.1%)	0(0.0%)	0(0.0%)	0(0.0%)

[1] n(%)
[2] Individuals with unknown ages were excluded from the denominator when calculating the proportion of gonorrhoea notifications

CLINICAL GONORRHOEA NOTIFICATION COUNTS

Sexual behaviour by age-group and ethnicity

Of the clinical notifications for gonorrhoea, 28% were reported to be WSM, 26% MSW and 25% MSM [Figure 7]. Women who have sex with women and transgender people account for small numbers of cases (2% included in 'other' category in Table 3). For 22% of cases, clinicians reported sexual behaviour as 'unknown'. The 'other' and 'unknown' categories are not included in the following graphs.

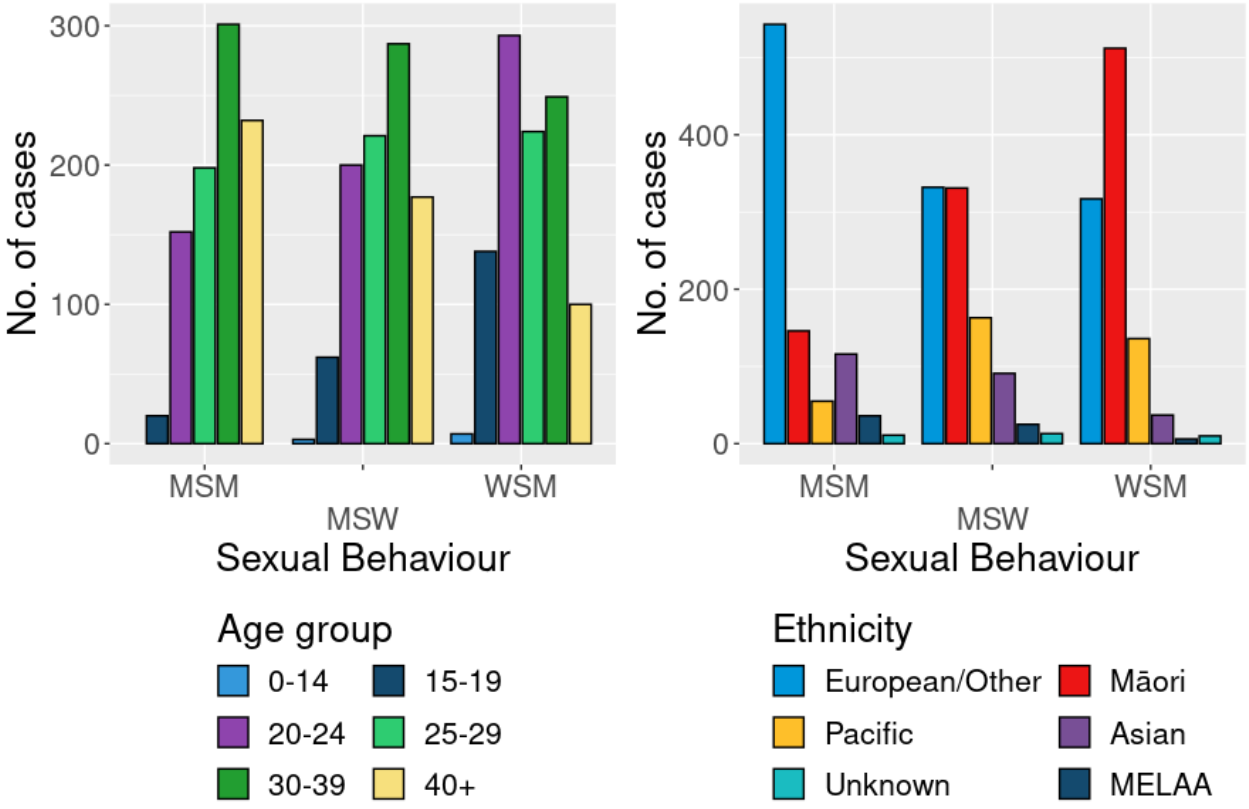
The proportion of notifications reported to be WSM was steady compared to 2019, with MSW increasing from 21% and MSM decreasing from 31% in 2019. The proportion of notifications without sexual behaviour reported increased from 17% in 2019.

By age and sexual behaviour, MSM and MSW were slightly older and predominantly in the 20 – 40+ age-groups, with the peak in the 30–39 age-group. WSM were slightly younger and predominantly in the 15–39-year age-groups, with the peak in the 20–24 age-group.

Among MSM, 60% of cases were of European/other ethnicity 16% Māori and 13% Asian. Cases among MSW 35% were of European/other ethnicity, 35% Māori and 17% Pacific. The highest number of WSM cases was reported amongst those of Māori ethnicity (50% of cases), followed by European/other (31% of cases) and then Pacific (13% of cases).

The proportion of cases reported to be of Māori ethnicity has increased across all sexual behaviours in 2020 compared to 2019, particularly amongst WSM.

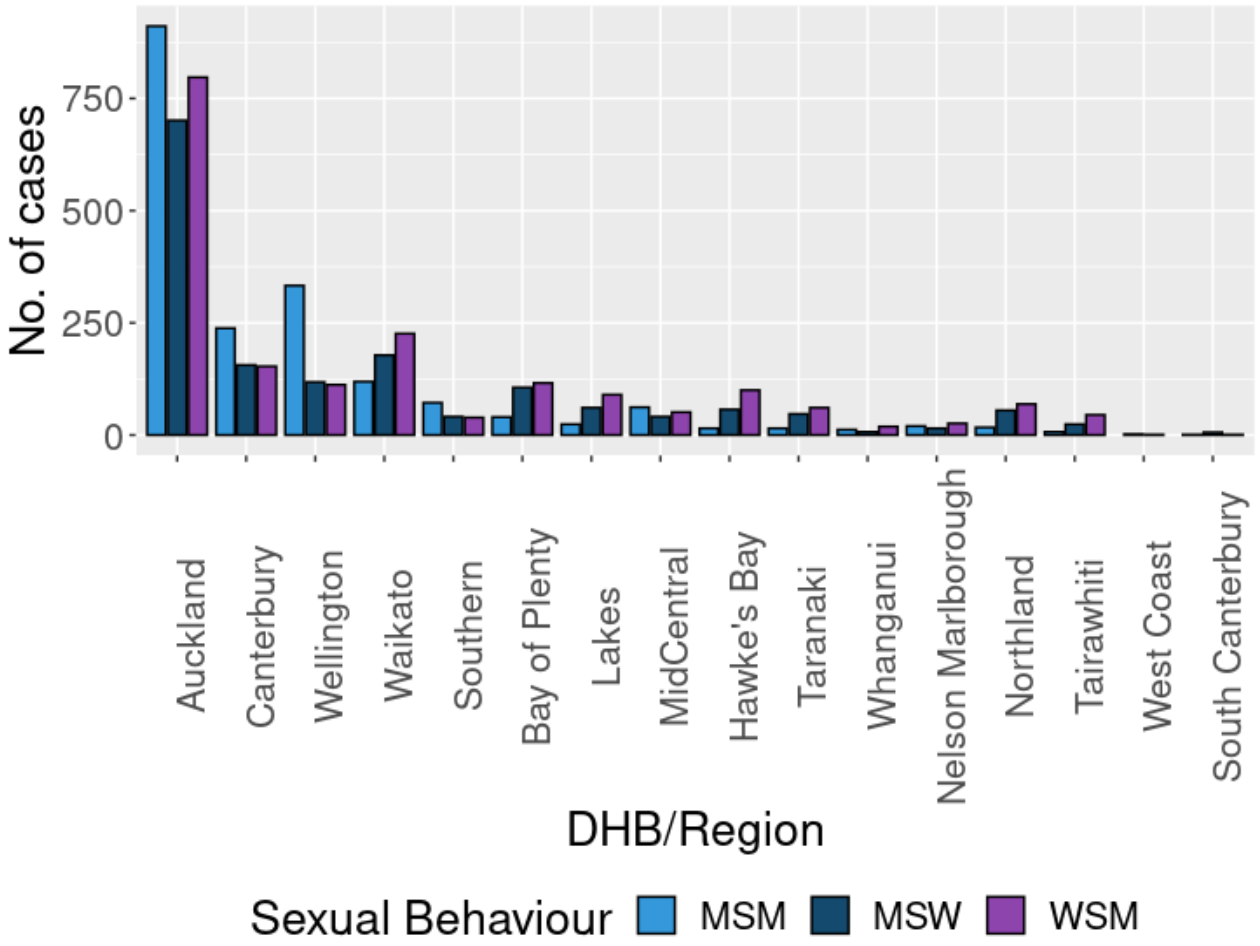
Figure 7: Clinical notifications for gonorrhoea by sexual behaviour and age-group and ethnicity: 2020



Sexual behaviour of cases notified with gonorrhoea in 2020 by DHB/region

Nearly half (44%) the clinical notifications for gonorrhoea were received from the Auckland region [Figure 8]. Auckland, Wellington and Canterbury regions accounted for 77% of all MSM cases, a slight decrease from 80% in 2019. All of these larger urban regions, as well as MidCentral and Southern, reported a higher proportion of MSM cases compared to other sexual behaviours. Other regions including Northland, Waikato, Bay of Plenty, Lakes, Tairawhiti, Hawkes Bay and Taranaki all reported more cases amongst WSM than other sexual behaviours.

Figure 8: Clinical notifications for gonorrhoea by sexual behaviour and region: 2020



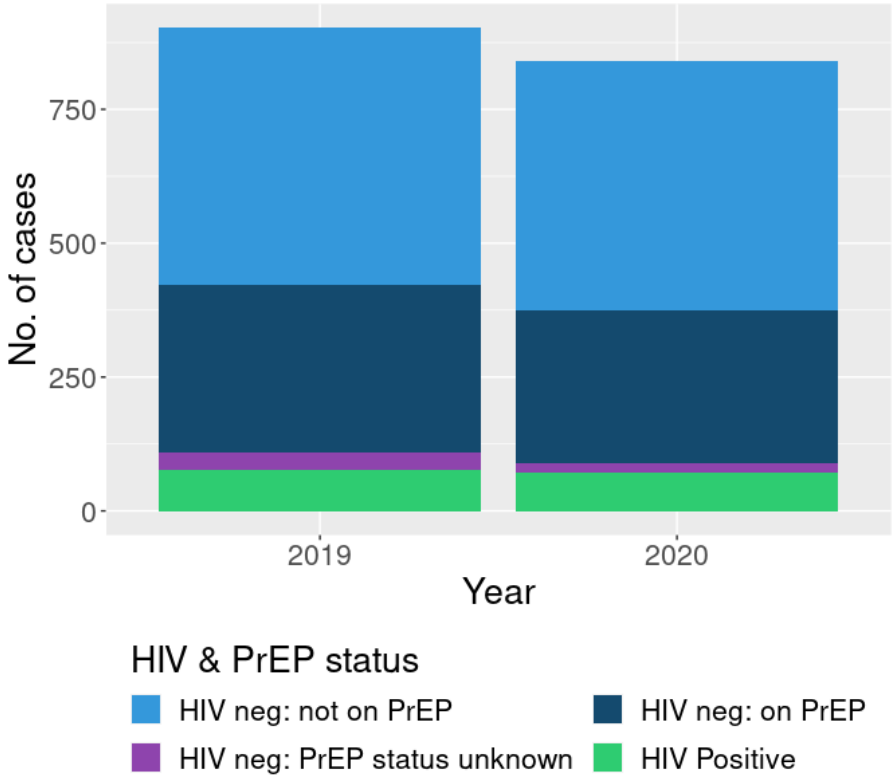
SPECIAL POPULATIONS AMONG CASES NOTIFIED WITH GONORRHOEA IN 2020

HIV & PrEP status amongst MSM

Of the 925 MSM with gonorrhoea, 788 (85.2%) were HIV negative and 71 were (7.7%) HIV positive [Figure 9]. HIV status was unknown for 66 cases (7.1%) Figure 9. The proportion of MSM with gonorrhoea who were also HIV positive remained steady in 2020 (7.7%) compared to 2019 (8.5%).

Of the 859 MSM cases with a known HIV negative status, 479 (55.8%) were not on PrEP, 289 (33.6%) reported being on PrEP while PrEP status was unknown for 20 (2.3%) while the remaining 71 (8.3%) were HIV positive and ineligible for PrEP.

Figure 9: HIV and PrEP status of clinical gonorrhoea notifications amongst MSM: 2019–2020



Sex workers

Table 4: Sex worker status of gonorrhoea cases by sex in 2019–2020

Sex Worker Status	2019	2020
Case is a sex worker	90 (2.9%)	85 (2.3%)
Case is not a sex worker	2533 (80.7%)	2994 (80.1%)
Unknown	515 (16.4%)	659 (17.6%)
Total	**3138 (100.0%)**	**3738 (100.0%)**

Of all clinical notifications received, 85 (2.3%) were identified as sex workers in 2020, compared to 90 (2.9%) in 2019. Among female cases, 64 (4.2%) were reported to be sex workers compared to 69 cases (5.5%) in 2019; among male cases, 21 sex workers were reported in both 2019 (1.1%) and 2020 (0.9%). The sex worker status of cases was unknown in 24% of female cases and 13% of male cases.

The number of clinical notifications identified as sex workers decreased in Auckland from 60 (67% of notifications among sex workers) in 2019 to 39 (46% of notifications among sex workers) in 2020, increased in Canterbury and Taranaki and remained steady in Wellington and Waikato. Few cases were reported in other regions.

In 2020, most cases amongst sex workers were of European/Other (45/85, 53%) or Māori (29/85, 34%) ethnicity. By sexual behaviour 53/85 (62%) were WSM and 17 (20%) were MSM.

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 decreased in 2020 (61 cases) compared to 2019 (86 cases) and was the lowest for the five years reported [Table 5]. The site of infection was the eye for all cases for whom a site of infection was reported (74%). The highest number of cases were reported in Māori infants in 2020, consistent with previous years. More cases of Pacific ethnicity (14) were reported in 2020 compared to those of European/Other ethnicity (9) following a larger decrease from 2019 amongst those of European/Other ethnicity (61% decrease).

Table 5: Laboratory reported chlamydia among cases <1 year of age, by ethnicity, sex and site of infection: 2016–2020

	2016	2017	2018	2019	2020
Ethnicity					
Māori	28	37	25	36	22
Pacific	14	15	14	18	14
Asian	3	5	2	5	4
European/Other	11	11	14	23	9
MELAA	1	1	0	0	2
Unknown	13	28	20	4	10
Sex					
Female	36	49	33	45	30
Male	34	46	42	41	31
Site of Infection					
Eye	56	74	64	73	46
Unknown	14	23	11	13	15
Total	**70**	**97**	**75**	**86**	**61**

CHARACTERISTICS OF ALL PAEDIATRIC GONORRHOEA CASES

Paediatric gonorrhoea case numbers are small and decreased slightly from 2019. The highest number of cases continue to be reported among Māori infants, however there was a decrease among those of both Māori and European/Other ethnicity in 2020 while two infants in 2020 were Pacific and two Asian after no cases reported in either of these groups in 2019.

Table 6: Laboratory reported gonorrhoea by ethnicity, sex and site of infection: 2016–2020

	2016	2017	2018	2019	2020
Ethnicity					
Asian	0	0	0	0	2
European/Other	2	0	2	6	1
Māori	2	3	5	10	6
MELAA	0	0	1	0	0
Pacific	1	3	1	0	2
Unknown	2	5	0	0	3
Sex					
Female	3	5	6	9	11
Male	3	5	3	7	3
Site of Infection					
Eye	3	7	9	9	9
Unknown	4	4	0	7	5
Total	**7**	**11**	**9**	**16**	**14**

GENITAL WARTS

First presentations of genital warts to sexual health and Family Planning clinics around New Zealand are reported to ESR to monitor the impact of the vaccination for human papillomavirus (HPV). HPV is implicated in the development of both genital warts and 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 from 2017 (Ministry of Health, 2021).

Table 7: Characteristics of first presentation genital warts cases by sex, age, ethnicity and region: 2016–2020

Year	2016 N = 1,399[1]	2017 N = 1,183[1]	2018 N = 1,110[1]	2019 N = 856[1]	2020 N = 795[1]
Sex					
Female	584(42%)	477(40%)	467(42%)	336(39%)	283(36%)
Male	811(58%)	698(59%)	641(58%)	520(61%)	512(64%)
Unknown/Other	4(0%)	8(1%)	2(0%)	0(0%)	0(0%)
Age Group					
0–14	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
15–19	127(9%)	106(9%)	77(7%)	52(6%)	34(4%)
20–24	400(29%)	352(30%)	307(28%)	234(27%)	215(27%)
25–29	335(24%)	285(24%)	281(25%)	184(22%)	204(26%)
30–39	315(23%)	259(22%)	258(23%)	207(24%)	206(26%)
40+	221(16%)	181(15%)	187(17%)	177(21%)	136(17%)
Unknown[2]	1 (0%)	0 (0%)	0 (0%)	2(0%)	0 (0%)
Ethnicity					
European/Pakeha	953(68%)	802(68%)	752(68%)	465(54%)	498(63%)
Māori	204(15%)	136(11%)	163(15%)	136(16%)	100(13%)
Other	163(12%)	164(14%)	149(13%)	213(25%)	152(19%)
Pacific Peoples	46(3%)	38(3%)	22(2%)	32(4%)	32(4%)
Unknown	33(2%)	43(4%)	24(2%)	10(1%)	13(2%)
Geographical Region					
Auckland region	444(32%)	379(32%)	395(36%)	302(35%)	291(37%)
Bay of Plenty	88(6%)	98(8%)	83(7%)	47(5%)	57(7%)
Canterbury	173(12%)	109(9%)	128(12%)	107(12%)	96(12%)
Hawkes Bay	23(2%)	31(3%)	22(2%)	13(2%)	19(2%)
Lakes	24(2%)	22(2%)	24(2%)	15(2%)	24(3%)
MidCentral	35(3%)	20(2%)	4(0%)	10(1%)	5(1%)
Nelson Marlborough	70(5%)	69(6%)	94(8%)	56(7%)	56(7%)
Northland	9(1%)	9(1%)	11(1%)	18(2%)	7(1%)
South Canterbury	7(1%)	2(0%)	6(1%)	5(1%)	1(0%)
Southern	81(6%)	66(6%)	55(5%)	53(6%)	35(4%)
Tairawhiti	4(0%)	0(0%)	3(0%)	1(0%)	3(0%)
Taranaki	44(3%)	38(3%)	28(3%)	31(4%)	42(5%)
Waikato	196(14%)	163(14%)	116(10%)	94(11%)	99(12%)
Wellington region	180(13%)	163(14%)	126(11%)	94(11%)	50(6%)
West Coast	13(1%)	9(1%)	9(1%)	6(1%)	5(1%)
Whanganui	8(1%)	5(0%)	6(1%)	4(0%)	4(1%)
Unknown	0 (0%)	0 (0%)	0(0%)	0 (0%)	1(0%)

[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 genital warts cases reported in 2020 declined by 61 cases (7.1%) compared to 2019, a less marked decline than seen in previous years (28% in 2019). In a number of regions, a small increase in the number of cases of genital warts was reported, including Bay of Plenty, Hawkes Bay, Lakes, Taranaki, Waikato and Wellington. In other regions, case numbers remained steady or slightly decreased.

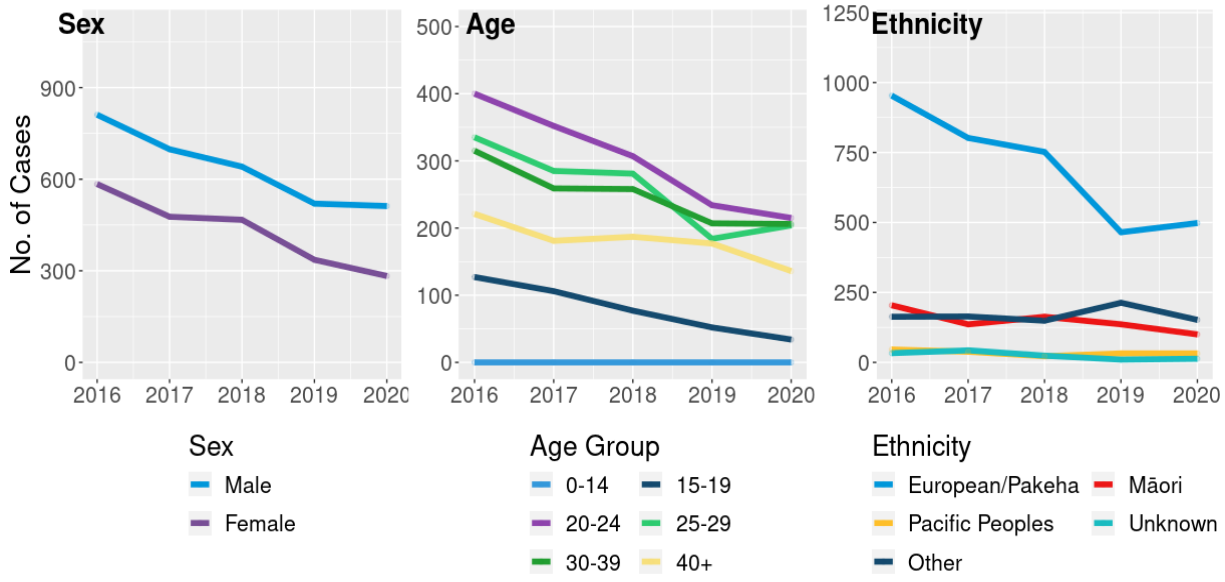
Genital warts by sex, age and ethnicity

Cases of genital warts among females continued to decline in 2020 (14% compared to 2019) while cases amongst males were steady (decline of 3 cases).

Case numbers decreased or were steady across all age groups except for those aged 25–29 year among whom case numbers increased by 20 cases (11%) compared to 2019 [Figure 10].

Case numbers declined or were steady amongst all ethnicities except for among those of European/Other ethnicity where an increase of 33 cases (7%) compared to 2019 was seen.

Figure 10: Genital warts cases by sex, age-group and ethnicity: 2016–2020



CLINIC SURVEILLANCE OF LYMPHOGRANULOMA VENEREUM (LGV)

No cases of LGV were reported in 2020.

INEQUITIES ANALYSIS

Given the timelines for publication of recent annual reports, this section is similar to the 2017–2019 annual report inequities analysis. Going forward comparisons will be made to this report, with reference to objectives and strategic directions of the Aotearoa New Zealand Sexually Transmitted and Blood Borne Infection Strategy 2022–2032.

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)

Health inequities in STIs in Aotearoa New Zealand are particularly experienced by Māori, Pacific, young people and MSM. Describing inequities is a crucial first step to eliminating them. Inequities are likely to reflect different access to sexual health care and differences in sexual network characteristics rather than sexual behaviour alone. 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 because access to quality, culturally safe STI prevention and treatment has not been equitably distributed. 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).

In New Zealand, the Waitangi Tribunal has concluded that persistent health inequities experienced by Māori across every disease state are the consequence of the failure to apply the principles of Te Tiriti o Waitangi at the structural, organisational and service delivery levels of the health and disability system (Waitangi Tribunal, 2019). Unmet need for health care has been consistently more common among Māori and Pacific than European and other people in NZ Health Surveys (Ministry of Health 2019 and 2020) and youth health surveys, and has recently increased for young Māori for sexual and reproductive health services (Clark, 2020). The draft Aotearoa New Zealand Sexually Transmitted and Blood Borne Infection Strategy 2022–2032 gives effect to the principles of Te Tiriti o Waitangi as a legal requirement, and takes an equity first approach to address these ongoing disparities (Ministry of Health, 2021).

This report demonstrates that as seen in 2017–2019, rates of gonorrhoea, chlamydia and syphilis continue to be higher among Māori and Pacific peoples than in those of European/other ethnicity. In 2020 all cases of congenital syphilis were among Māori and Pacific infants (6 and 2 cases), and the most common missed prevention opportunity across this reporting period was late or absent antenatal care. The highest number of cases of chlamydia conjunctivitis was also reported in Māori and Pacific infants, and of gonorrhoea conjunctivitis in Māori infants. While information is not available to assess missed prevention opportunities for infant chlamydia and gonorrhoea conjunctivitis, it is likely that lack of access to antenatal care is a contributing factor. These infections in infants demonstrate inequitable access to appropriate antenatal care as well as sexual health care for Māori and Pacific people.

This report also demonstrates marked inequities in rates of infectious syphilis for MSM compared to MSW. Of the clinical notifications for gonorrhoea, the largest group were likewise reported to be MSM, and a study of STI rates calculated from 2019 notification data has further demonstrated markedly higher rates of gonorrhoea for MSM compared to other groups (Saxton, 2021). Sexual behaviour information is not currently available for other STIs. 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).

As seen in the 2017–2019 period, in 2020 young people continue to suffer higher rates of STIs, with the 20–29-year age group having the highest rates of syphilis, gonorrhoea and chlamydia, although rates of syphilis and chlamydia declined markedly in these age groups in 2020 compared to 2019.

Chlamydia and gonorrhoea rates declined in the 15–19-year age group in 2020. The Youth 19 survey found secondary school students reporting ever having had sex had declined and the age of initiating sexual activity had increased between 2012 and 2019, which may account for these findings (Clark, 2020).

REFERENCES

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

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

Hammerschlag, M. (2011). Chlamydial and gonococcal infections in infants and children. *Clinical infectious diseases, 53*(Suppl 3), S99-S102.

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.

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

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

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.

Ministry of Health. (2021). *HPV Immunisation Programme*. Retrieved from Immunisation: https://www.health.govt.nz/our-work/preventative-health-wellness/immunisation/hpv-immunisation-programme

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

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

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

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

APPENDIX 1: ADDITIONAL TABLES

REASON FOR SYPHILIS TEST BY SEXUAL BEHAVIOUR: 2020

Table 8: Reason for test amongst infectious syphilis cases by sexual behaviour in New Zealand: 2020

Reason for test	MSM	MSW	Other	Unknown	WSM
Asymptomatic screening including PrEP	92 (31.8%)	15 (13.27%)	-	3 (17.6%)	8 (9.0%)
Clinical symptoms/suspicion	135 (46.7%)	55 (48.67%)	-	8 (47.1%)	24 (27.0%)
Contact of STI/HIV	9 (3.1%)	3 (2.65%)	1 (33%)	-	1 (1.1%)
Immigration	3 (1.0%)	7 (6.19%)	1 (33%)	-	-
Other	12 (4.2%)	8 (7.08%)	-	4 (23.5%)	12 (13.5%)
Syphilis Contact	29 (10.0%)	21 (18.58%)	1 (33%)	2 (11.8%)	17 (19.1%)
Unknown	9 (3.1%)	4 (3.54%)	-	-	5 (5.6%)
Antenatal screening	-	-	-	-	21 (23.6%)
Mother seropositive	-	-	-	-	1 (1.1%)

INFECTIOUS SYPHILIS CASES BY ETHNICITY, COUNTRY OF INFECTION AND CLINICAL SETTING OF TEST: 2020

Table 9: Syphilis cases by ethnicity, country of infection and clinical setting of test in New Zealand: 2020

Infectious syphilis cases by sexual behaviour and ethnicity, country of infection and clinical setting of first syphilis test: 2020						
	MSM	MSW	WSM	Other	Unknown	Total
Ethnicity						
European/Other	146	52	28	1	4	**231**
Māori	44	26	40		1	**111**
Pacific	25	14	8		3	**50**
Asian	32	12	2	1	4	**51**
MELAA	7	2	1			**10**
Unknown	35	7	10	1	5	**58**
Country of Infection						
Australia	3	3	1	1		**8**
New Zealand	262	95	82	1	4	**444**
Other	10	9	3	1		**23**
United States	4	2				**6**
Unknown	10	4	3		13	**30**
Clinical setting of initial syphilis test						
Corrections	1	6	2		1	**10**
ED	3	3	2		1	**9**
General Practice	100	45	32	2	7	**186**
ID clinic	11	2				**13**
NGO clinic	14	1	6			**21**
Other/Unknown	9	10	11		3	**33**
Sexual Health clinic	151	46	26	1	5	**229**
Antenatal clinic/midwife			5			**5**
Obstetric Ward			5			**5**
Total	**289**	**113**	**89**	**3**	**17**	**511**

INFECTIOUS SYPHILIS CO-INFECTIONS BY SEXUAL BEHAVIOUR: 2020

Table 10: Infectious syphilis cases and co-infections by sexual behaviour: 2020

	MSM	MSW	WSM	Other	Unknown	Total
Chlamydia	42	16	13	1	0	72
Gonorrhoea	27	3	7	0	3	40
Trichomoniasis	0	5	7	0	0	12
Genital Herpes	4	0	2	0	0	6
Genital Warts	2	2	1	0	0	5
Mycoplasma Genitalium	2	0	0	0	0	2
NSU	3	2	0	0	0	5
LGV	0	1	0	0	0	1

INFECTIOUS SYPHILIS: NUMBER OF PARTNERS IN PAST 3 MONTHS BY SEXUAL BEHAVIOUR: 2020

Table 11: Number of partners in past three months by sexual behaviour of case and sex of partner:

2020

	MSM	MSW	WSM	Total
No. of male partners				
0	21	48	1	70
1	88	6	58	152
2–4	108	10	26	144
5–9	35	4	1	40
10–15	18	0	2	20
>15	10	1	0	11
Unknown	9	44	1	54
No. of female partners				
0	141	28	49	218
1	16	44	5	65
2–4	10	28	0	38
5–9	2	3	1	6
10–15	0	2	0	2
>15	0	0	0	0
Unknown	120	8	34	162

GONORRHOEA: NUMBER OF PARTNERS IN PAST THREE MONTHS BY SEXUAL BEHAVIOUR: 2020

Table 12: Number of partners in past three months by sexual behaviour of case and sex of partner: 2020

	MSM	MSW	WSM	Total
No. of male partners				
0	36	588	14	638
1	180	33	531	744
2–4	307	24	359	690
5–9	169	12	40	221
10–15	108	8	16	132
>15	58	1	13	72
Unknown	49	289	45	383
No. of female partners				
0	682	49	760	1,491
1	57	401	23	481
2–4	39	365	13	417
5–9	8	57	2	67
10–15	5	13	1	19
>15	2	5	0	7
Unknown	114	65	219	398
Total	**907**	**955**	**1,018**	**2,880**

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 have shown that clinical notifications are made only for around 45% of total positive cases (3,138/7,200). 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.

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 13: 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

On a monthly basis, collaborating Sexual Health and Family Planning clinics manually extract data and provide aggregate data to ESR via excel spreadsheets. This includes the total number of clinic consultations per month and numbers of consultations for a number of 'other STIs' including lymphogranuloma venereum, chancroid, donovanosis, first episode genital warts, first episode genital herpes, and non-specific urethritis, by age, sex, and ethnicity.

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.

Table 14: STIs under clinic-based surveillance 2017–2018 and 2019

Infection	Category or criteria	Site (for confirmed infections)	2017–18	2019
Genital warts	1st diagnosis at reporting clinic	Site recorded	Yes	Yes
Lymphogranuloma venereum	Confirmed or probable	Site recorded	Yes	Yes

Generalisability of clinic data

Clinics participating in STI sentinel surveillance are located in cities and some larger rural towns. Most other rural towns and isolated populations have limited or no access to Sexual Health Clinics (SHCs) and Family Planning clinics (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 surveillance data from SHCs and FPCs are a non-random selection, that can provide an alert for changes occurring in the wider population. Notification data by all clinicians would be generalizable if under-notification is low and unbiased.

Limitations of clinic data

From 2017 to 2019 50 clinics participated, covering all regions. 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. Lower than expected numbers based on risk groups are sometimes received from large centres which may be due to variations in clinical attendance, coding or data entry.

ANALYTIC METHODS

Numerator data

- Gonorrhoea positive cases (episodes): the total number of laboratory-confirmed [Table 4] 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 2020 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 gonorrhoea per 100,000 population.

Limitations in trends analysis

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 has been reported for trends.

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.

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