



**HIV, viral hepatitis  
and sexually transmissible  
infections in Australia  
Annual surveillance  
report 2021**



**Sexually  
Transmissible  
Infections**

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# HIV, viral hepatitis and sexually transmissible infections in Australia

## Annual surveillance report 2021

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in collaboration with networks in surveillance for HIV, viral hepatitis and sexually transmissible infections

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# Abbreviations

<b>ABS</b>	Australian Bureau of Statistics
<b>ACCESS</b>	Australian Collaboration for Coordinated Enhanced Sentinel Surveillance
<b>AIDS</b>	acquired immunodeficiency syndrome
<b>ANSPS</b>	Australian Needle Syringe Program Survey
<b>ART</b>	Antiretroviral therapy
<b>BBV</b>	bloodborne virus
<b>CI</b>	confidence interval
<b>DNA</b>	deoxyribonucleic acid
<b>HIV</b>	human immunodeficiency virus
<b>HPV</b>	human papillomavirus
<b>PEP</b>	post-exposure prophylaxis
<b>PrEP</b>	pre-exposure prophylaxis RNA ribonucleic acid
<b>STI</b>	sexually transmissible infection
<b>TasP</b>	treatment as prevention
<b>UNAIDS</b>	Joint United Nations Programme on HIV/AIDS

# Sexually transmissible infections

*The years for comparison in this report are from 2011 to 2020 unless focus is given to the impact of the COVID-19 epidemic, where the years for comparison are 2011 to 2019, and 2019 and 2020.*

## 1 Summary data

### Chlamydia

#### Chlamydia notifications

- Chlamydia was the most frequently notified sexually transmissible infection (STI) in Australia in 2020, with a total of 90 516 notifications. Around two-thirds (64 402, 71%) were among people aged 15 to 29 years. More than half (49 192, 55%) were among females.
- The chlamydia notification rate remained relatively stable between 2011 and 2015, gradually increased from 368.8 per 100 000 in 2015 to 434.5 per 100 000 in 2019 and then declined to be 367.9 per 100 000 population in 2020. The decline in the notification rate in 2020 is likely due to a decrease in testing rates related to the ongoing COVID-19 pandemic and may not be reflective of the trend in new chlamydia infections.
- The notification rate has been higher among females than males in each of the past 10 years and in 2020 was 397.3 and 340.5 per 100 000, respectively.
- In 2020, chlamydia notification rates were highest among people aged 20 to 24 years (1754.3 per 100 000), 25 to 29 years (1035.8 per 100 000), and 15 to 19 years (982.2 per 100 000).
- The chlamydia notification rate among the Aboriginal and Torres Strait Islander population remained steady between 2016 and 2020, but was almost three times as high as among the non-Indigenous population in 2020 (1110.8 vs 396.7 per 100 000).
- People aged 20 to 24 years had the highest chlamydia notification rate among both the Aboriginal and Torres Strait Islander population (4264.4 per 100 000) and the non-Indigenous population (2058.8 per 100 000). These data are from the Australian Capital Territory, Northern Territory, Queensland, South Australia and Western Australia.

#### Testing

- The number of Medicare-rebated chlamydia tests in Australia has increased by 39% from 550 004 in 2011 to 764 303 in 2019. Between 2019 and 2020, the number of tests declined by 11%, likely related to the impact of the COVID-19 pandemic on STI testing.
- The proportion of general practice attendees aged 15 to 29 years who had a Medicare-rebated chlamydia test in 2020 was 17%, the highest proportion tested since before 2011. This relatively high proportion, in conjunction with overall low number of tests conducted suggests that the number of people aged 15 to 29 years seeking health care declined in 2020.
- The amount of testing in a population can influence notification trends. In 2020, the number of chlamydia notifications per 100 Medicare-rebated chlamydia tests declined and was 9.6 for males, 4.8 for females and 6.3 overall.

#### Incidence

- In 2020, chlamydia incidence among HIV-positive gay and bisexual men (49.3 new infections per 100 person-years) was 1.6 times as high as among HIV-negative gay and bisexual men (30.5 per 100 person-years).
- In 2020, there was a 70% increase in chlamydia incidence among HIV-positive gay and bisexual men and 62% increase in HIV-negative gay and bisexual men since 2012.
- Among female sex workers, chlamydia incidence increased by 73% between 2012 and 2020 (from 7.8 to 13.5 per 100 person-years).

#### Testing and care cascade

- In 2020, there were an estimated 232 390 (137 880 in men, 94 520 in women) new chlamydia infections in people aged 15–29 years. Of those, an estimated 66 350 (29% overall, 20% men, 42% women) were diagnosed, 61 940 (93% of those diagnosed, 93% for both men and women) received treatment, and 10 280 (17% of those treated, 13% men, 19% women) had a retest between six weeks and six months after diagnosis.

# Gonorrhoea

## Gonorrhoea notifications

- In 2020 there were 29 497 gonorrhoea notifications in Australia, with over two-thirds of all notifications in males (20 527, 70%).
- Between 2016 and 2019 there was a 40% increase in notification rates (101.0 to 141.4 per 100 000), followed by a 16% decline from 2019 to 119.3 in 2020. The decline in the notification rate in 2020 is likely due to a decrease in testing rates related to the ongoing COVID-19 pandemic and may not be reflective of the trend in new gonorrhoea infections.
- Similar trends were observed among males and females. The gonorrhoea notification rate has been higher among males than females in each year since 2011 and was 165.5 per 100 000 among males and 73.0 per 100 000 among females in 2020.
- Between 2016 and 2019, gonorrhoea notification rates increased in major cities (41% increase) and regional areas (45% increase). The notification rate remained stable in remote areas over the same period. The notification rate declined in all areas between 2019 and 2020. In 2020, gonorrhoea notification rates were highest in remote areas (559.1 per 100 000), followed by major cities (120.3 per 100 000) and regional areas (69.5 per 100 000).
- The gonorrhoea notification rate among the Aboriginal and Torres Strait Islander population in 2020 was more than four times as high as among the non-Indigenous population (446.0 per 100 000 and 105.4 per 100 000, respectively). These data are from all states and territories.
- In 2020, the ratio of male to female notifications among Aboriginal and Torres Strait Islander people was 0.8:1 compared with 2.8:1 among the non-Indigenous population suggesting greater transmission attributed to male-to-male sex among the non-Indigenous population.
- A quarter (25%) of gonorrhoea notifications among Aboriginal and Torres Strait Islander people were among those aged 15 to 19 years in 2020, compared to 5% among the non-Indigenous population.
- In 2020, the gonorrhoea notification rate among the Aboriginal and Torres Strait Islander population was highest in remote areas which was 23 times as high as in the non-Indigenous population (1287.4 vs. 55.6 per 100 000, respectively).

## Testing

- Between 2012 and 2020, the number of gonorrhoea notifications per 100 Medicare-rebated gonorrhoea tests increased by 43% (from 1.4 to 2.0), with increases in both males (50%) and females (36%). These data suggest that the increases observed in notifications cannot be fully explained by more testing. The ratio was higher in males (4.5 in 2020) in each of the past five years than in females (0.9 in 2020).

## Incidence

- In 2020, the gonorrhoea incidence rate among HIV-positive gay and bisexual men (45.2 new infections per 100 person-years) was 1.6 times as high as among HIV-negative gay and bisexual men (29.1 per 100 person-years).
- Among female sex workers, the incidence of gonorrhoea increased by 157%, from 3.7 per 100 person-years in 2012, to 9.5 per 100 person-years in 2020.

## Testing and care cascade

- In 2020, there were an estimated 59 620 new gonorrhoea infections among gay and bisexual men. Of those, an estimated 13 670 (23%) were diagnosed, 11 350 (83% of those diagnosed) received treatment, and 6190 (55% of those treated) had a retest between six weeks and six months after diagnosis.



# Infectious Syphilis

## Infectious Syphilis notifications

- In 2020 there were 5248 infectious syphilis notifications (infections of less than two years' duration) in Australia. The majority (4284, 82%) of these notifications were among males.
- Between 2011 and 2019, the infectious syphilis notification rate quadrupled from 6.0 to 24.0 per 100 000, followed by a 12% decline between 2019 and 2020 to 21.2 per 100 000, with similar trends seen among males and females. The decline in the notification rate in 2020 is likely due to a decrease in testing rates related to the ongoing COVID-19 pandemic and may not be reflective of the trend in new infectious syphilis infections.
- The notification rate of infectious syphilis in 2020 was more than four times as high among males (34.7 per 100 000) than among females (7.8 per 100 000).
- In 2020, infectious syphilis notification rates were highest among people aged 25 to 29 years (48.6 per 100 000), 30 to 39 years (45.4 per 100 000), and 20 to 24 years (35.3 per 100 000).
- In 2020, notification rates were highest in remote areas (107.7 per 100 000), followed by major cities (21.4 per 100 000), and regional areas (12.4 per 100 000).
- In 2020, just over 49% of infectious syphilis notifications among the Aboriginal and Torres Strait Islander population were among males compared to 88% among the non-Indigenous population.
- The notification rate among the Aboriginal and Torres Strait Islander population was 5.6 times as high than among the non-Indigenous population (101.5 per 100 000, compared to 18.1 per 100 000).
- The infectious syphilis notification rate among the Aboriginal and Torres Strait Islander population in 2020 was highest in remote areas (197.0 per 100 000), compared with major cities for non-Indigenous people (20.6 per 100 000).
- Between 2011 and 2020, around half (31, 52%) of the 58 congenital syphilis notifications were among the Aboriginal and Torres Strait Islander population.
- In 2020, the congenital syphilis notification rate among the Aboriginal and Torres Strait Islander population was 13 times as high as the non-Indigenous notification rate (36.3 and 2.8 per 100 000 live births, respectively). Overall, there were 17 congenital syphilis cases in 2020, eight among the Aboriginal and Torres Strait Islander population, eight among the non-Indigenous population and one without Aboriginal and Torres Strait Islander status reported.

## Testing

- Among gay and bisexual men attending sexual health clinics in the Australian Collaboration for Coordinated Enhanced Sentinel Surveillance network, the average number of syphilis tests per person remained stable between 2011 and 2019 but declined by 11% between 2019 and 2020 from 1.8 to 1.6 tests per year.
- Results from the Gay Community Periodic Surveys, conducted prior to the COVID-19 pandemic but reported in 2020, show comprehensive STI testing, defined as at least four samples from separate body sites, in the past 12 months among gay and bisexual men increased from 35.7% in 2011 to 57.1% 2020.

## Incidence

- In 2020, the incidence of infectious syphilis among HIV-positive gay and bisexual men and HIV-negative gay and bisexual men attending sexual health clinics was 8.9 and 6.7 new infections per 100 person-years, respectively. Between 2011 and 2020, infectious syphilis incidence increased among HIV-negative gay and bisexual men by 109% (from 3.2 per 100 person-years), while among HIV-positive gay and bisexual men the incidence rate fluctuated.
- In 2020, the infectious syphilis incidence rate among female sex workers was 0.7 per 100 person-years, up 250% from 0.2 per 100 person-years in 2011.

## Other sexually transmissible infections

- Donovanosis, once a commonly diagnosed STI among remote Aboriginal populations, is now close to elimination, with only three cases notified since 2011, with the last case notified in 2015.
- Among non-Indigenous females aged under 21 years attending sexual health clinics for the first time, the proportion diagnosed with genital warts has fallen a relative 92% from 10.1% in 2007 to 0.8% in 2020.
- Among non-Indigenous Australian-born heterosexual males under 21 years attending sexual health clinics for the first time, the proportion diagnosed with genital warts has fallen by a relative 93% from 4.4% in 2007 to 0.5% in 2018, a reduction of 98%, with an 87% decline since 2013 when male vaccination was introduced.

## Interpretation

In 2020, testing, diagnosis and treatment of STI have been strongly influenced by the ongoing COVID-19 pandemic with corresponding declines in new diagnoses of chlamydia, gonorrhoea and infectious syphilis occurring between 2019 and 2020. The majority of infections among people between the ages of 15 and 29 years remain undiagnosed and untreated, highlighting the need for testing to be routinely offered to sexually active adolescents and young adults. Stronger efforts to support partner notification and treatment of sexual partners are also needed to reduce the incidence of chlamydia.

Gonorrhoea and infectious syphilis in Australia are reported primarily among gay and bisexual men in urban settings, and among young heterosexual Aboriginal and Torres Strait Islander people in remote areas, although gonorrhoea and infectious syphilis notification rates among women in urban settings continue to increase.

Based on the interpretation of the ratio of diagnoses by gender, gonorrhoea and infectious syphilis have been diagnosed more frequently in the past five years among gay and bisexual men. Explanations for these increases among gay and bisexual men include more comprehensive screening, a change to more sensitive gonorrhoea testing technology, and greater availability and awareness of highly effective HIV prevention strategies and in turn a decrease in the use of condoms and greater sexual mixing. Efforts to improve health promotion, testing and treatment among gay and bisexual men need to be strengthened.

The increasing ratio of notifications to the number of Medicare-rebated tests for gonorrhoea among both men and women suggests increasing transmission through heterosexual sex, highlighting the need for health promotion, enhanced testing and partner notification in heterosexual men and women. In female sex workers as well as gay and bisexual men, the rise in chlamydia and gonorrhoea incidence in recent years highlights the need for enhanced focus on prevention strategies.

Among the Aboriginal and Torres Strait Islander population, notification rates of STIs remain higher than in the non-Indigenous population, with gonorrhoea more than six times as high, infectious syphilis more than five times as high, and chlamydia almost three times as high. The increases in infectious syphilis among young Aboriginal and Torres Strait Islander people in regional and remote areas, along with a considerable increase in the number of congenital syphilis cases, emphasise the need to enhance culturally appropriate health promotion, testing and treatment strategies in this population.

# Sexually transmissible infections

## 2 Chlamydia

See page 1 for summary.

### 2.1 Chlamydia notifications

Chlamydia (*Chlamydia trachomatis* infection) remains the most frequently notified STI in Australia with 90 516 notifications reported in 2020. Of these, just over half (47 614, 53%) were among females, and two-thirds (64 402, 71%) were among people aged 15 to 29 years. Just under three quarters (66 118, 73%) were among people residing in major cities (Table 1). Of all chlamydia notification reported in 2020, 7030 (8%) of which were among the Aboriginal and Torres Strait Islander population, 34 131 (38%) were among the non-Indigenous population, and 49 355 (55%) were among people for whom Indigenous status was not reported (Table 1). See [Bloodborne viral and sexually transmissible infections in Aboriginal and Torres Strait Islander people: annual surveillance report 2021](#) for further details <sup>(5)</sup>.

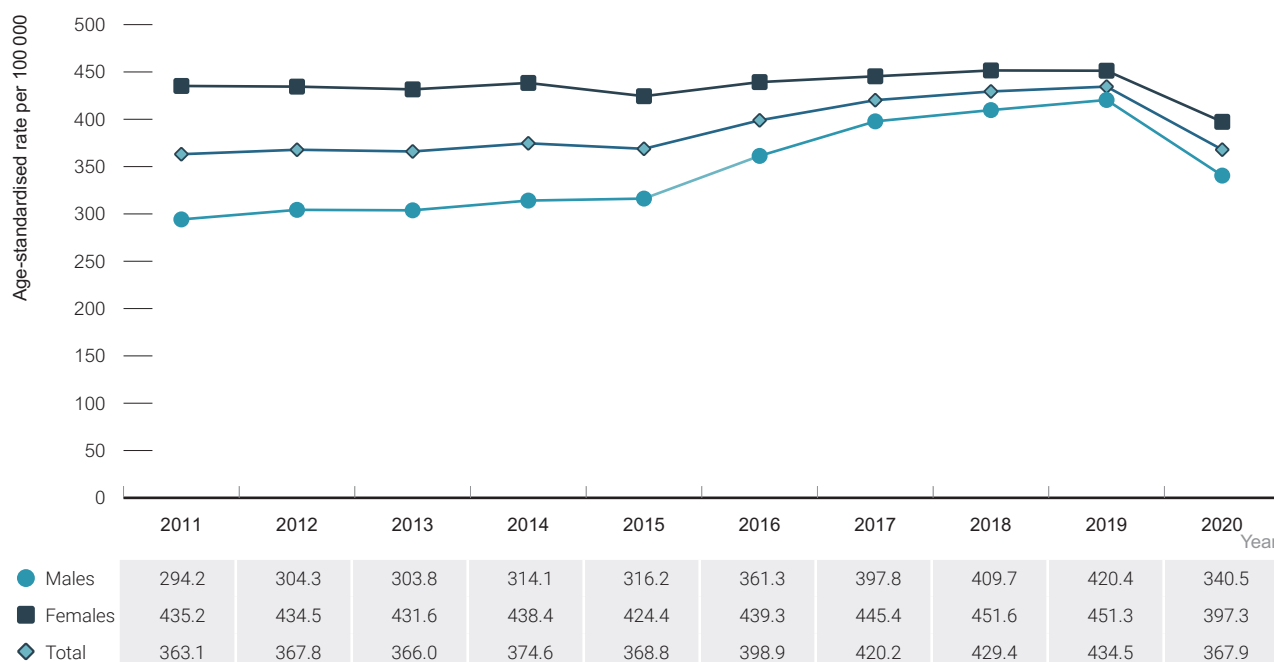
**Table 1** Characteristics of chlamydia notifications, 2011–2020

Characteristic	Year of diagnosis									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Total cases</b>	81 065	83 213	83 827	86 809	86 407	94 597	101 212	104 780	107 286	90 516
<b>Gender</b>										
Male	33 489	35 063	35 446	37 016	37 621	43 391	48 489	50 640	52 578	42 607
Female	47 436	48 026	48 323	49 718	48 718	51 077	52 563	53 920	54 445	47 614
Missing	140	124	58	75	68	129	160	220	263	295
<b>Age group</b>										
0–14	753	786	728	685	506	505	454	463	445	359
15–19	21 806	21 112	19 964	19 186	17 490	17 602	17 667	17 386	16 695	14 639
20–24	29 788	30 482	30 492	31 686	30 697	32 537	34 144	34 716	34 794	30 018
25–29	14 250	14 834	15 989	17 139	17 791	20 117	21 920	22 809	23 372	19 745
30–39	6 036	6 775	7 070	7 828	8 723	10 177	11 449	12 243	13 084	10 865
40+	3 307	3 507	3 682	3 826	4 245	5 202	5 873	6 767	7 557	6 281
Missing	5 019	5 612	5 880	6 449	6 933	8 434	9 681	10 380	11 309	8 586
<b>Remoteness</b>										
Major cities	53 793	55 763	56 329	59 089	59 899	66 913	73 393	76 161	77 741	66 118
Regional	21 696	21 899	21 421	21 792	20 828	21 566	21 488	22 060	22 229	19 476
Remote	4 244	4 215	4 279	4 192	3 995	3 969	3 879	4 098	3 998	3 430
Missing	1 332	1 336	1 798	1 736	1 685	2 149	2 452	2 461	3 318	1 492
<b>Aboriginal and Torres Strait Islander status</b>										
Aboriginal and/or Torres Strait Islander	7 396	7 337	7 270	7 077	6 950	7 217	7 335	7 693	7 711	7 030
Non-Indigenous	36 911	38 366	29 343	29 985	29 832	32 427	35 119	36 922	40 484	34 131
Not reported	36 758	37 510	47 214	49 747	49 625	54 953	58 758	60 165	59 091	49 355

Source: Australian National Notifiable Diseases Surveillance System.

The chlamydia notification rate remained relatively stable between 2011 and 2015, gradually increased between 2015 and 2019 and then declined in 2020. In 2020 the chlamydia notification rate was 367.9 notifications per 100 000 population. Similar trends were seen among both males and females (Figure 1). The notification rate has consistently been higher among females than males over the past 10 years. In 2020, the notification rate declined in both females and males, to 397.3 and 340.5 per 100 000 respectively. The decline in the notification rate in 2020 is likely due to a decrease in testing rates related to the ongoing COVID-19 pandemic and may not be reflective of the trend in new chlamydia infections.

**Figure 1 Chlamydia notification rate per 100 000, 2011–2020, by gender**



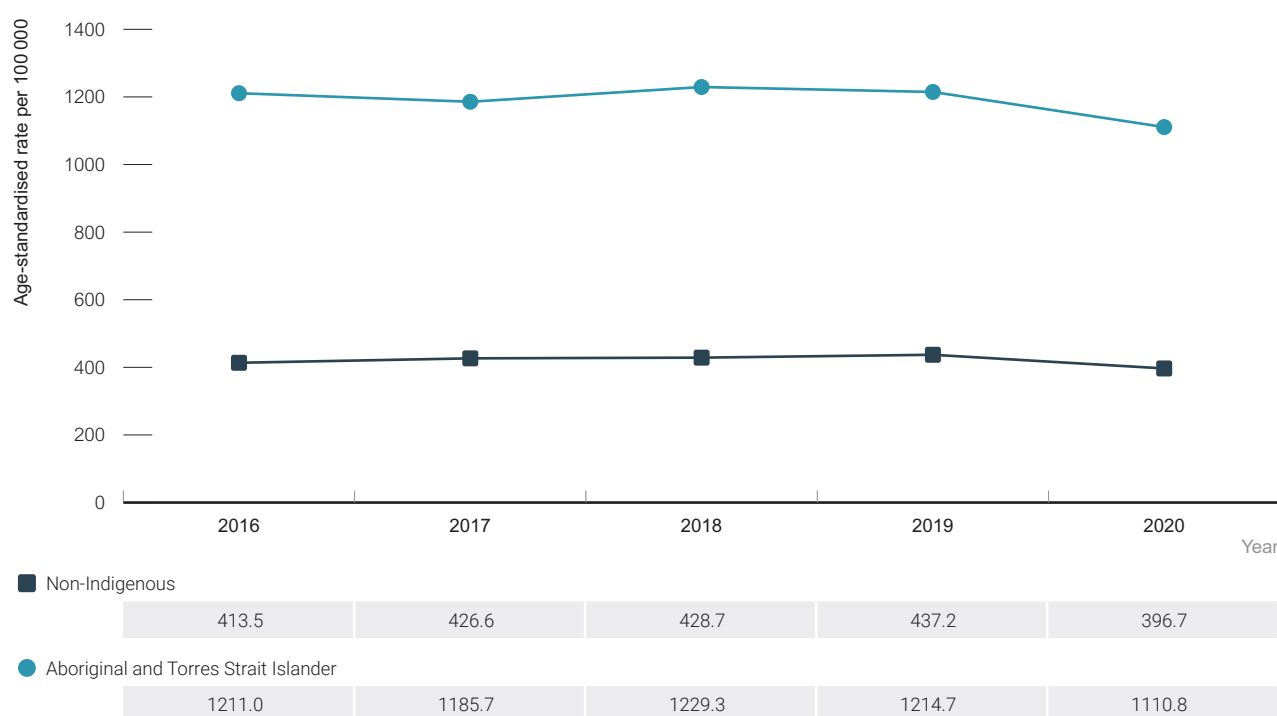
Source: Australian National Notifiable Diseases Surveillance System

The trends in chlamydia notification rates varied by age group. Aside from the decline in notification rates in 2020, the notification rates steadily increased between 2011 and 2019 for those aged 20 to 24 years (from 1848.3 to 1988.7 per 100 000) and 25 to 29 years (from 859.1 to 1035.8 per 100 000). However, for those aged 15 to 19 years, there was a steady decline from 1500.2 per 100 000 in 2011 to 982.2 per 100 000 in 2020. In 2020 the notification rate was 982.2 per 100 000 for those aged 15 to 19 years, 1754.3 per 100 000 for those aged 20 to 24 years and 1035.8 per 100 000 for those aged 25 to 29 years. Similar patterns were seen among males and females. Breakdowns of chlamydia notification rates by age and gender can be found on [the Kirby Institute data site](#).

The chlamydia notification rates among the Aboriginal and Torres Strait Islander population are based on data from five jurisdictions (the Australian Capital Territory, the Northern Territory, Queensland, South Australia, and Western Australia), where Indigenous status was  $\geq 50\%$  complete each of the past five years (2016–2020). Just over half (56%) of the Aboriginal and Torres Strait Islander population reside in these jurisdictions, so it is important to note that the notification rates may not be nationally representative.

The chlamydia notification rate among the Aboriginal and Torres Strait Islander population remained steady between 2016 and 2020, but was almost three times as high as among the non-Indigenous population in 2020 (1110.8 vs 396.7 per 100 000) (Figure 2).

**Figure 2** Chlamydia notification rate per 100 000, 2016–2020, by Aboriginal and Torres Strait Islander status



Source: Australian National Notifiable Diseases Surveillance System. Includes jurisdictions in which Aboriginal and Torres Strait Islander status was reported for  $\geq 50\%$  of notifications for each year (Australian Capital Territory, Northern Territory, Queensland, South Australia and Western Australia).

The chlamydia notification rate was highest in remote areas for each of the ten years from 2011 to 2020 (Figure 3). In 2020, the chlamydia notification rate was 856.0 per 100 000 in remote areas, 360.8 in regional areas, and 352.3 in major cities. This pattern also occurred among males and females. For a full breakdown of notification rates by remoteness classification, please see the [the Kirby Institute data site](#).

**Figure 3** Chlamydia notification rate per 100 000 population, 2011–2020, by region of residence



Source: Australian National Notifiable Diseases Surveillance System

## 2.2 Chlamydia testing

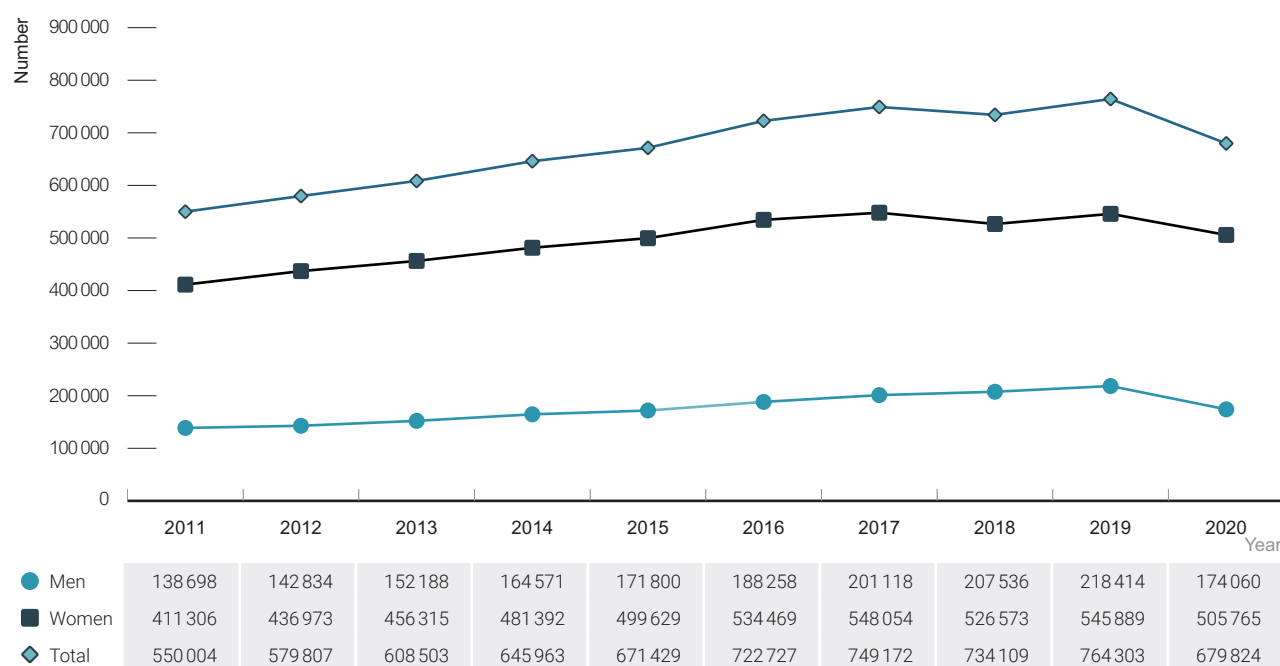
Clinical guidelines recommend the opportunistic offer of chlamydia screening to all young people at least annually, and regular testing for sex workers <sup>(1)</sup>. Annual testing is recommended for sexually active gay and bisexual men, and testing every three months for higher risk men based on behavioural criteria and those taking pre-exposure prophylaxis (PrEP) <sup>(2)</sup>. Chlamydia testing data are included in this report from a number of sources including Medicare, sexual health clinics and high-caseload general practice clinics.

### Medicare-rebated chlamydia tests

Between 2011 and 2019, the number of Medicare-rebated chlamydia tests in Australia has increased by 39% among those aged 15 to 29 years, from 550 004 in 2011, to 764 303 in 2019, with increases in both females (33% increase) and males (57% increase) (Figure 4). Between 2019 and 2020, the number of tests declined by 11%, with a greater decline in the number of tests seen among females (7%) than males (20%). The decline in the number of chlamydia tests among those aged 15 to 29 years is likely related to the challenges accessing healthcare because of the ongoing COVID-19 pandemic. Declines in testing are also likely influenced the decline in notification rates seen in 2020. It is important to note that these tests capture Medicare-rebated tests and that testing conducted in government hospitals and sexual health services are usually not included. Therefore, the numbers given here underestimate all chlamydia tests conducted in Australia.

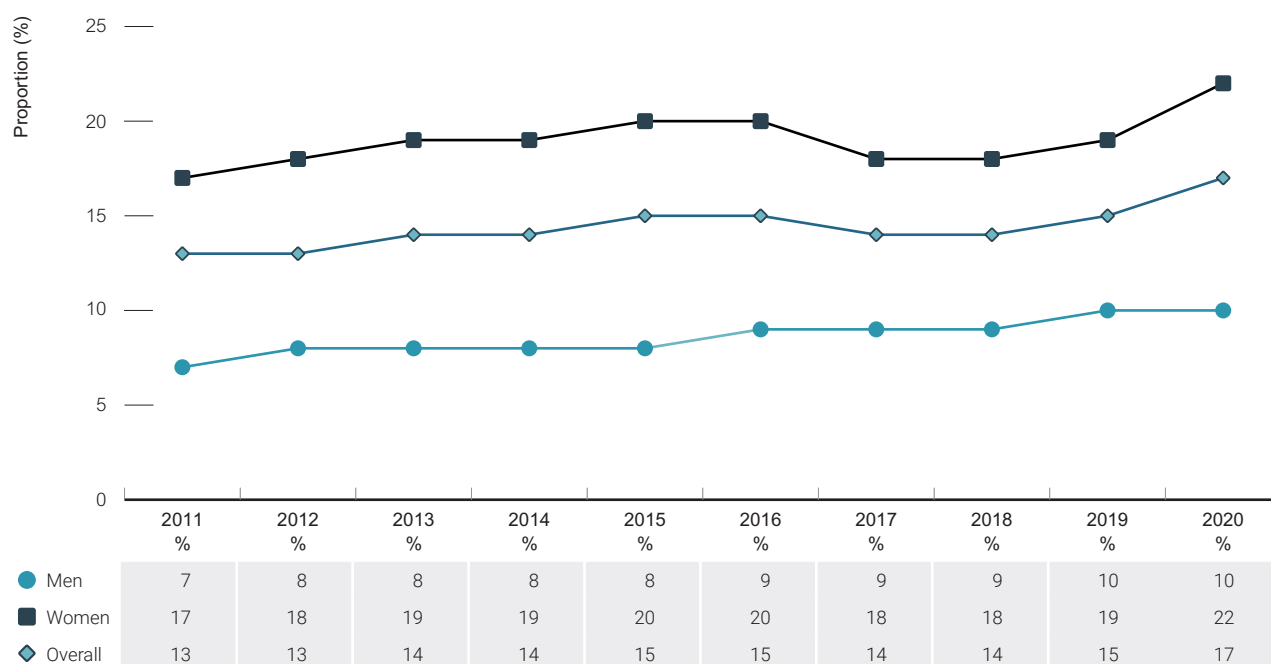
In 2020, 17% of people aged 15–29 years attending general practice had a Medicare-rebated chlamydia test in the previous 12 months (22% of women and 10% men), the highest proportion since prior to 2011 (Figure 5). Despite the high proportion of people getting tested for chlamydia at their general practice, the lower number of tests conducted in 2020 overall suggests that the number of people seeking health care at their general practice declined in 2020. Across all populations, the number of face-to-face Medicare-rebated General Practice appointments declined by 23% between 2019 and 2020<sup>(3)</sup>.

**Figure 4** Number of Medicare-rebated chlamydia tests in Australia, by gender, 2011–2020



Source: Medicare.

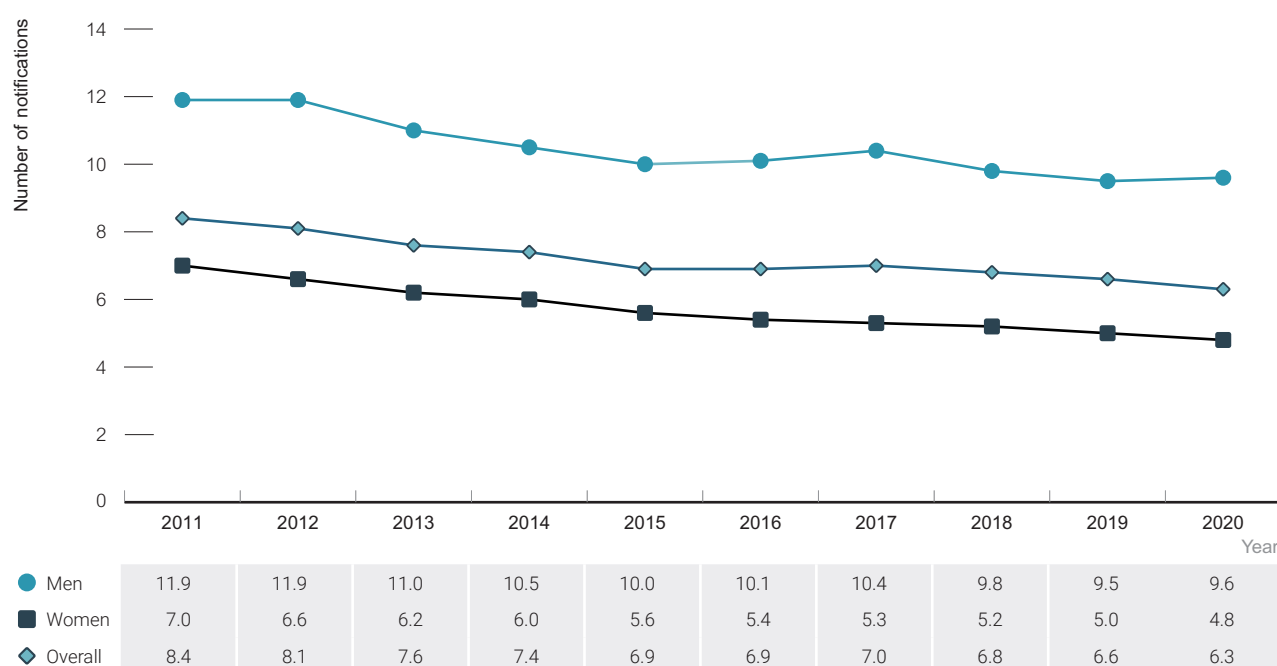
**Figure 5** Proportion of general practice attendees aged 15–29 years who had a Medicare-rebated chlamydia test in a year, by gender, 2011–2020



Source: Medicare.

It is important to consider trends in chlamydia notifications in the context of patterns of testing, as changes in notification rates can be an indication of changes in testing, changes in incidence, or both. In 2020, the number of chlamydia notifications per 100 Medicare-rebated chlamydia tests declined and was 9.6 for males, 4.8 for females and 6.3 overall (Figure 6). Males had a higher number of notifications per 100 tests than females each year since 2011. Given the likely decline in the number of people accessing health care in 2020, these numbers should be interpreted with caution. Further breakdowns by age and gender are available on [the Kirby Institute data site](#).

**Figure 6** Number of chlamydia notifications per 100 Medicare-rebated chlamydia tests, by gender, 2011–2020



Source: Medicare; Australian National Notifiable Diseases Surveillance System.



## 2.3 Chlamydia incidence

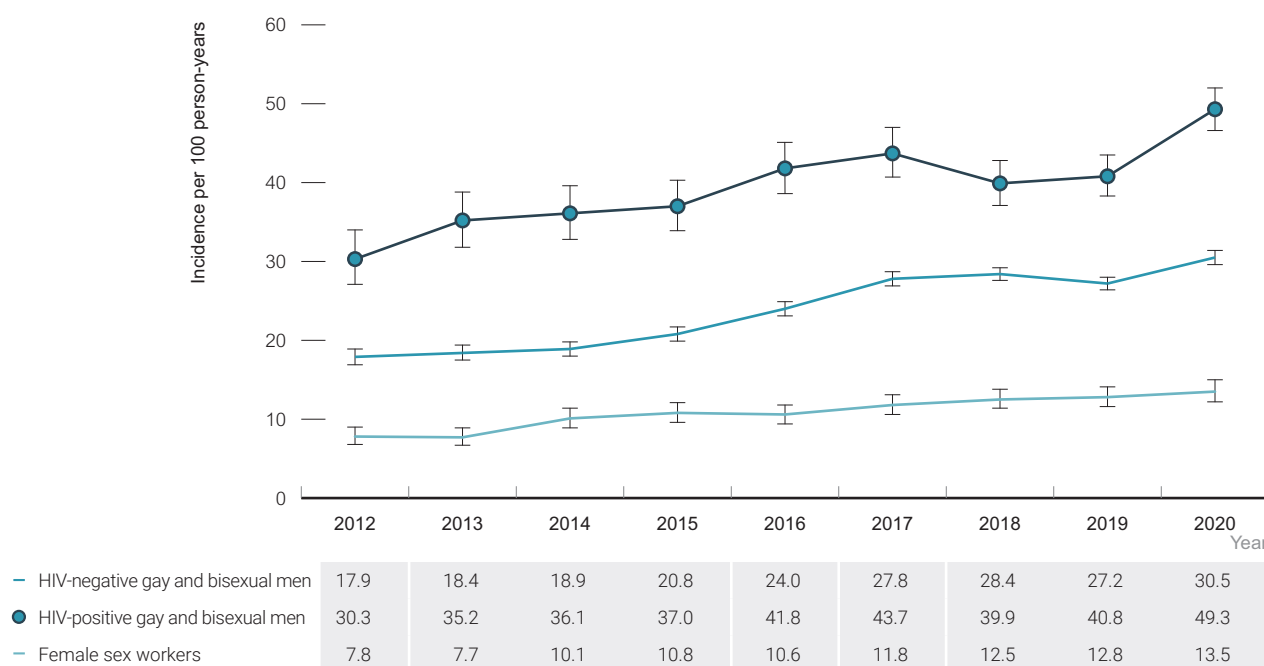
Chlamydia incidence is an important indicator of new transmissions and can reflect the impact of prevention programs, whereas prevalence reflects the burden of disease. Chlamydia incidence is available from the ACCESS (Australian Collaboration for Coordinated Enhanced Sentinel Surveillance) network and is calculated by dividing the number of incident infections (negative test followed by a positive test) among people undergoing repeat chlamydia testing at sexual health services by the person's time at risk (determined by the time between repeat chlamydia tests). These incidence estimates represent populations attending sexual health clinics and may not be generalisable to the broader priority populations. Further details about the methods used can be found in the [Methodology](#).

In 2020, chlamydia incidence among HIV-positive gay and bisexual men was 49.3 new infections per 100 person-years, which was more than 1.5 times as high as in HIV-negative gay and bisexual men (30.5 per 100 person-years). There was a 63% increase in chlamydia incidence among HIV-positive gay and bisexual men since 2012 (from 30.3 per 100 person-years) and a 70% increase in HIV-negative gay and bisexual men since 2012 (from 17.9 per 100 person-years) (Figure 7).

Among female sex workers, chlamydia incidence increased by 73% between 2012 and 2020 (from 7.8 to 13.5 per 100 person-years) (Figure 7).

Caution should be taken with interpretation as some confidence intervals overlap, indicating that these between-year differences are not statistically significant.

**Figure 7 Chlamydia incidence in sexual health clinic attendees, 2012–2020, by select population**



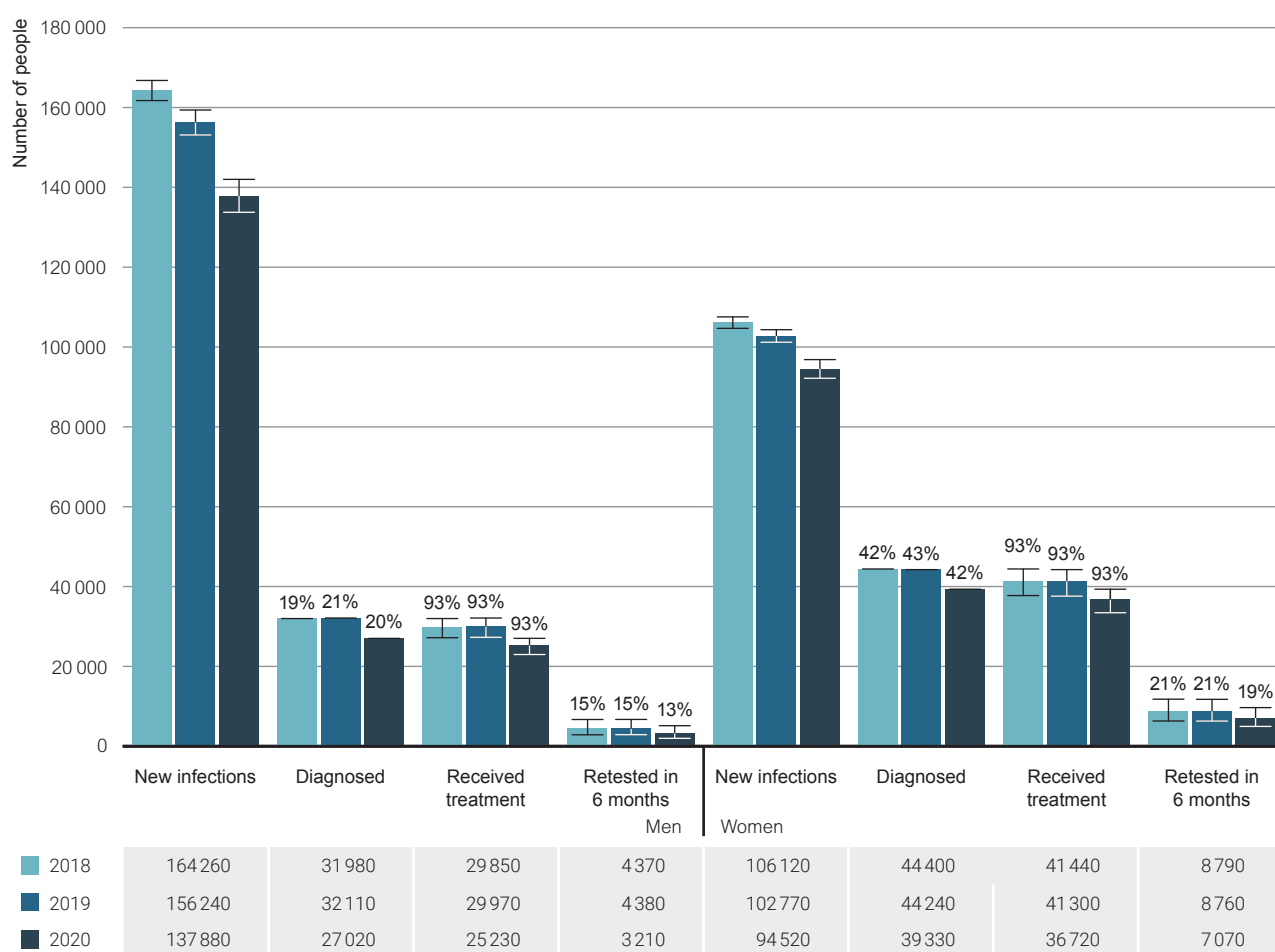
Source: ACCESS (Australian Collaboration for Coordinated Enhanced Sentinel Surveillance).

## 2.4 Chlamydia diagnosis and care cascade

This report includes the chlamydia diagnosis and care ‘cascade’ for people aged 15–29 years, which estimates the number and proportion of people with new chlamydia infections in Australia, and the number and proportion who were diagnosed, received treatment and had a retest within six weeks to six months of diagnosis, as recommended in clinical guidelines <sup>(1)</sup>. These estimates are used to support the improvement of delivery of services to people with chlamydia across the entire continuum of care—from diagnosis of infection, uptake of treatment, and management (retesting). Using available data and accounting for uncertainties, the proportions of people in each stage of the cascade in Australia were estimated (Figure 9). Methods and the associated uncertainties are described in detail in the [Methodology](#). The approach was informed by recommendations from a national stakeholder reference group (see Acknowledgments section). The cascade focuses on people aged 15–29 years, as guidelines recommend annual testing in this group and most chlamydia diagnoses occur in this age group. The cascade includes estimates for both men and women. By the end of 2020, there were an estimated 232 390 (137 880 in men, 94 520 in women) new chlamydia infections in the 15–29 age group, including reinfections, down from 270 380 (164 260 in men, 106 120 in women) new infections in 2018. Of those new infections in 2020, an estimated 66 350 (29% overall, 20% men, 42% women) were diagnosed, 61 940 (93% of those diagnosed, 93% for both men and women) received treatment, and 10 280 (17% of those treated, 13% men, 19% women) had a retest between six weeks and six months after diagnosis (Figure 8).

The cascade shows that there was a higher estimated number of new infections in men than women aged 15–29 years in 2020. This reflects the fact that infections in men are acquired both by heterosexual men and by gay and bisexual men, among whom reinfection rates are higher <sup>(4)</sup>. However, it is estimated that a lower proportion of men than women are diagnosed (20% vs 42% in 2020). The proportion treated was similar for men and women, but the proportion in 2020 who had a retest following treatment was higher in women than men (19% vs 13%). The greatest gaps in the cascade were therefore at the diagnosis and retesting steps. Similar trends in the gaps were observed between 2018 and 2020.

**Figure 8** The chlamydia diagnosis and care cascade in people aged 15–29 years by gender, 2018–2020



Source: See [Methodology](#) for further details of mathematical modelling used to generate estimates.

# 3 Gonorrhoea

See page 2 for summary.

## 3.1 Gonorrhoea notifications

There were 29 497 gonorrhoea (*Neisseria gonorrhoeae*) notifications in Australia in 2020, an increase of 19% from 23 856 notifications in 2016. In 2020, 70% of notifications were among males (20 527 of notifications), 72% were among people aged 20 to 39 years (21 142 notifications) and 78% were among people residing in major cities (22 630 notifications) (Table 2).

Of the 29 497 notifications in 2020, 4237 (14%) were among the Aboriginal and Torres Strait Islander population, 16 034 (54%) were among the non-Indigenous population, and there were a further 9 226 (31%) notifications for whom Aboriginal and Torres Strait Islander status was not reported (Table 2).

The ratio of male to female notifications in the Aboriginal and Torres Strait Islander population in 2020 was 0.8:1 compared with 2.8:1 in the non-Indigenous population suggesting greater transmission attributed to male-to-male sex among the non-Indigenous population. In 2020, a quarter (25%) of gonorrhoea notifications among the Aboriginal and Torres Strait Islander people were among people aged 15 to 19 years, compared to 5% among non-Indigenous people aged 15 to 19 years. See *Bloodborne viral and sexually transmissible infections in Aboriginal and Torres Strait Islander people: annual surveillance report 2021* for further details <sup>(5)</sup>.

**Table 2** Characteristics of gonorrhoea notifications, 2011–2020

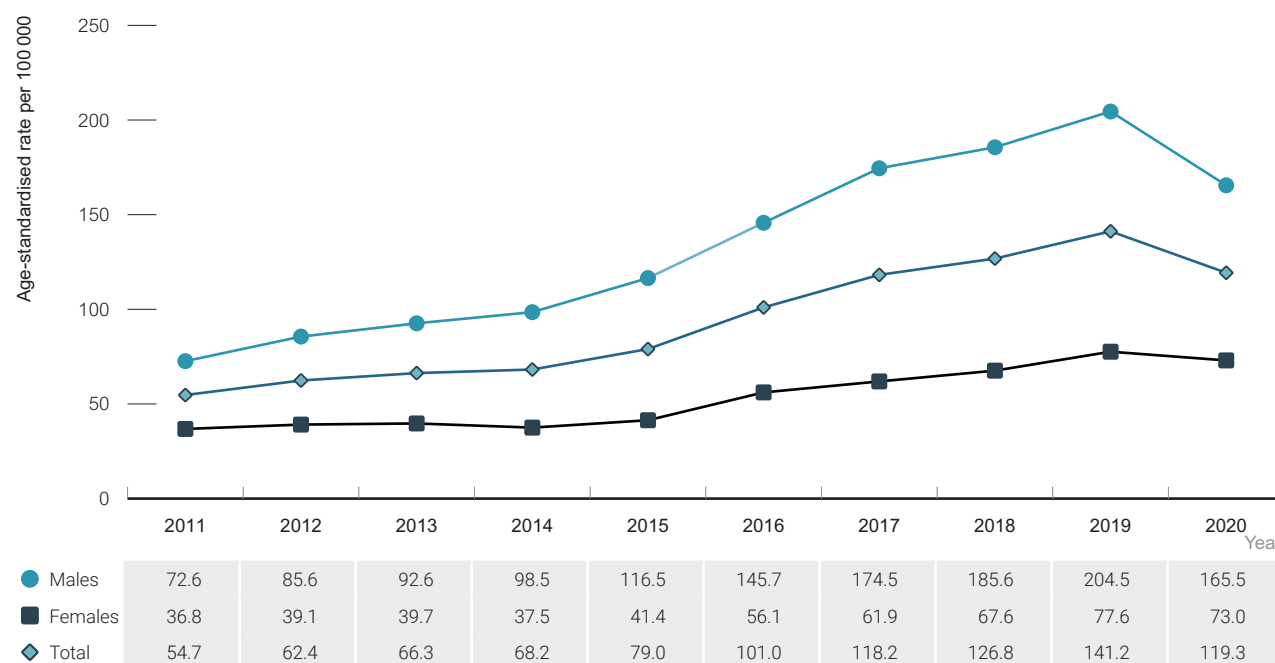
	Year of diagnosis									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Characteristic										
<b>Total cases</b>	12 089	13 961	15 047	15 683	18 466	23 856	28 363	30 842	34 780	29 497
<b>Gender</b>										
Male	3 958	4 271	4 403	4 204	4 745	6 499	7 291	8 097	9 413	8 829
Female	8 095	9 679	10 613	11 431	13 693	17 293	20 993	22 614	25 236	20 527
Missing	36	11	31	48	28	64	79	131	131	141
<b>Age group</b>										
0–14	245	265	230	252	218	252	200	195	194	162
15–19	2 314	2 365	2 255	2 045	2 010	2 384	2 585	2 426	2 519	2 338
20–24	2 837	3 304	3 458	3 678	4 115	4 967	5 955	5 939	6 374	5 276
25–29	2 204	2 621	3 013	3 261	4 054	5 325	6 399	6 873	7 888	6 536
30–34	1 422	1 783	2 073	2 198	2 801	3 869	4 747	5 460	6 355	5 520
35–39	949	1 138	1 266	1 349	1 744	2 411	3 018	3 606	4 310	3 810
40+	2 086	2 464	2 745	2 889	3 462	4 595	5 457	6 336	7 129	5 822
Missing age	32	21	7	11	62	53	2	7	11	33
<b>Remoteness</b>										
Major cities	6 387	8 339	9 190	10 464	13 006	17 824	21 065	22 879	26 415	22 630
Regional	2 301	2 328	2 237	2 190	2 224	2 669	3 165	3 450	3 899	3 756
Remote	3 115	2 885	2 836	2 400	2 516	2 570	2 530	2 856	2 230	2 266
Missing	286	409	784	629	720	793	1 603	1 657	2 236	845
<b>Aboriginal and Torres Strait Islander status</b>										
Aboriginal and/or Torres Strait Islander	4 587	4 278	4 214	3 561	3 603	3 810	4 155	4 667	4 051	4 237
Non-Indigenous	4 301	5 655	6 922	7 686	9 320	12 459	16 174	17 879	20 145	16 034
Not reported	3 201	4 028	3 911	4 436	5 543	7 587	8 034	8 296	10 584	9 226

Source: Australian National Notifiable Diseases Surveillance System.

By 2012, most laboratories in Australia had switched to using a duplex chlamydia and gonorrhoea test in which if one of the tests was ordered, both tests were performed automatically <sup>(6)</sup>. The emphasis on testing for chlamydia in young people has therefore led to a substantial rise in the number of tests conducted for gonorrhoea, which may partly explain the increase in notifications in women after 2012. This section will focus on notification rate trends between 2016 and 2020.

Between 2016 and 2019 there was a 40% increase in notification rates (101.0 to 141.2 per 100 000), followed by a 14% decline from 2019 to 2020 (119.3 per 100 000) (Figure 9). The decline in the notification rate in 2020 is likely due to a decrease in testing rates related to the ongoing COVID-19 pandemic and may not be reflective of the trend in new gonorrhoea infections. Similar trends were observed among males and females. The gonorrhoea notification rate has been higher among males than females in each year since 2011 and was 165.5 per 100 000 among males and 73.0 per 100 000 among females in 2020.

**Figure 9** Gonorrhoea notification rate per 100 000 population by gender, 2011–2020

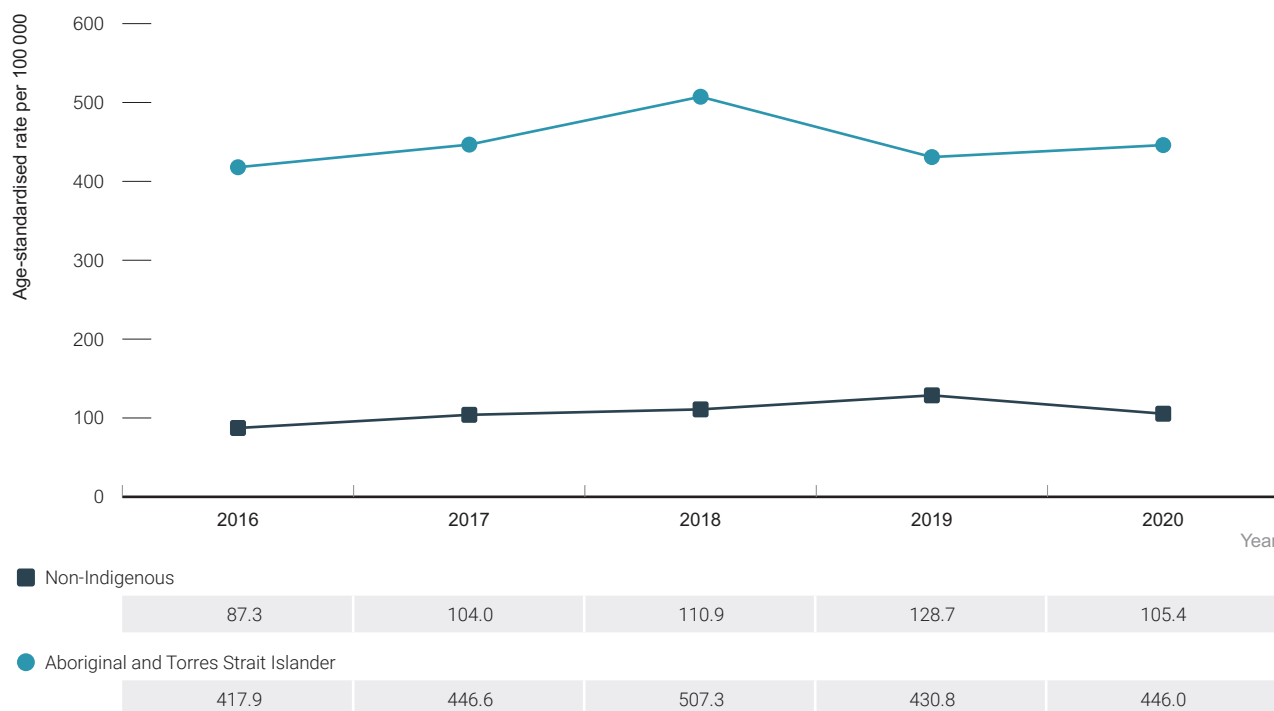


Source: Australian National Notifiable Diseases Surveillance System.

Between 2016 and 2019, the gonorrhoea notification rate increased for all age groups aged 25 years and older, with the largest increases among those aged 30 to 39 (133% increase) (Figure 18). Similar trends were seen among women and men. Among men, the largest increases were among those aged 30 to 39 years (57%) and those aged over 40 years (46%) and 25 to 29 years (41%). In 2020, the highest notification rates were among those aged 25 to 29 years (342.9 per 100 000), 20 to 24 years (308.3 per 100 000), and 30 to 39 years (248.3 per 100 000). Among men in 2020, the highest notification rates were among those aged 25 to 29 years (485.0 per 100 000), 20 to 24 years (355.4 per 100 000), and 30 to 39 years (381.1 per 100 000). Among women in 2020, the highest notification rates were among those aged 20 to 24 years (256.2 per 100 000), 25 to 29 years (194.8 per 100 000), and 15 to 19 years (186.2 per 100 000). For full notifications data by age, please see [the Kirby Institute data site](#).

Between 2016 and 2020, the gonorrhoea notification rate among the Aboriginal and Torres Strait Islander population fluctuated between 417.9 and 507.3 per 100 000. In 2020, the notification rate among Aboriginal and Torres Strait Islander people was 446.0 per 100 000. By comparison, there was a steady increase in the notification rate among the non-Indigenous population from 87.3 per 100 000 in 2016 to 128.7 per 100 000 in 2019, followed by a decline to 105.4 per 100 000 in 2020 (Figure 11). In 2020 the notification rate among the Aboriginal and Torres Strait Islander population was more than four times as high as among the non-Indigenous population (Figure 10).

**Figure 10** Gonorrhoea notification rate per 100 000 population by Aboriginal and Torres Strait Islander status, 2016–2020



Source: Australian National Notifiable Diseases Surveillance System. Includes all jurisdictions, as Indigenous status was reported for ≥50% of notifications for each year.

Between 2016 and 2019, gonorrhoea notification rates increased in major cities (41% increase) and regional areas (45% increase). Over the same period, the notification rate remained stable in remote areas (Figure 11). The notification rate declined in all areas between 2019 and 2020. In 2020, gonorrhoea notification rates were highest in remote areas (559.1 per 100 000), followed by major cities (120.3 per 100 000) and regional areas (69.5 per 100 000) (Figure 12). A similar trend was seen in both males and females. For breakdowns of gonorrhoea notification rates by gender and remoteness classifications, please see [the Kirby Institute data site](#).

**Figure 11** Gonorrhoea notification rate per 100 000 population, 2011–2020, by region of residence



Source: Australian National Notifiable Diseases Surveillance System. Includes all jurisdictions, as Indigenous status was reported for  $\geq 50\%$  of notifications for each year.

## 3.2 Gonorrhoea testing

Clinical guidelines recommend the opportunistic offer of gonorrhoea screening to all young people at least annually, in areas of high prevalence, and regular testing for sex workers <sup>(1)</sup>. Annual testing is recommended for sexually active gay and bisexual men, and testing every three to six months for men at higher risk on the basis of behavioural criteria and men taking pre-exposure prophylaxis (PrEP) <sup>(2)</sup>. Gonorrhoea testing data are included in this report from a number of sources including Medicare, sexual health clinics and high-caseload general practice clinics.

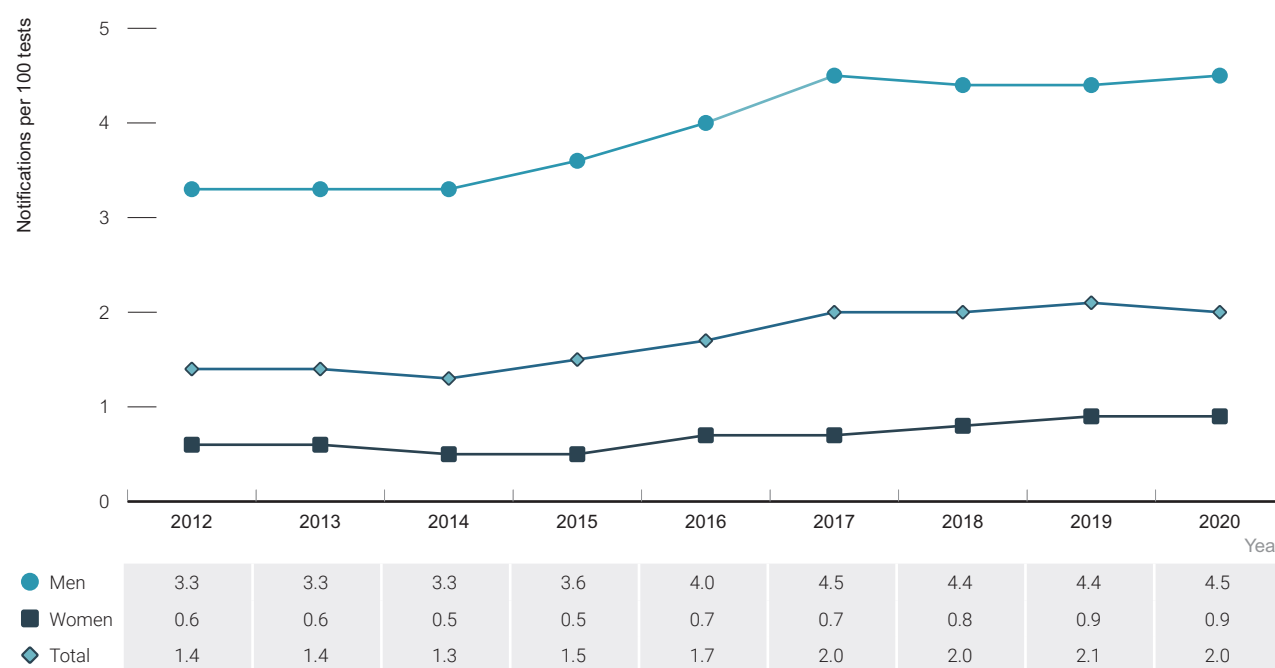
### Medicare-rebated gonorrhoea tests

As most laboratories since 2012 have switched to using dual chlamydia and gonorrhoea tests (i.e., if one of the tests is ordered, both tests are performed), Medicare-rebated chlamydia tests can be used to indicate the level of gonorrhoea testing (See Figure 4). For this reason, the data presented below are for the period 2012 to 2020.

Between 2012 and 2017, the number of gonorrhoea notifications per 100 Medicare-rebated gonorrhoea tests increased by 43% from 1.4 in 2012 to 2.0 in 2017, with an increase in both males (50%) and females (17%) (Figure 12). Between 2017 and 2020 this number remained stable between 2.0 and 2.1. This number of gonorrhoea notifications per 100 Medicare-rebated has been higher in males than females in each of the years since 2012 (4.5 vs 0.9 in 2020) (Figure 12). These data suggest that the increases observed in notifications between 2011 and 2019 cannot be fully explained by more testing.

These trends suggest that the increase in notifications in most age groups since 2014 is related more to increased transmission and less to increased testing (see Gonorrhoea notifications, pp. 17).

**Figure 12** Number gonorrhoea notifications per 100 Medicare-rebated gonorrhoea tests, by sex, 2012–2020



Source: Australian National Notifiable Diseases Surveillance System; Medicare.

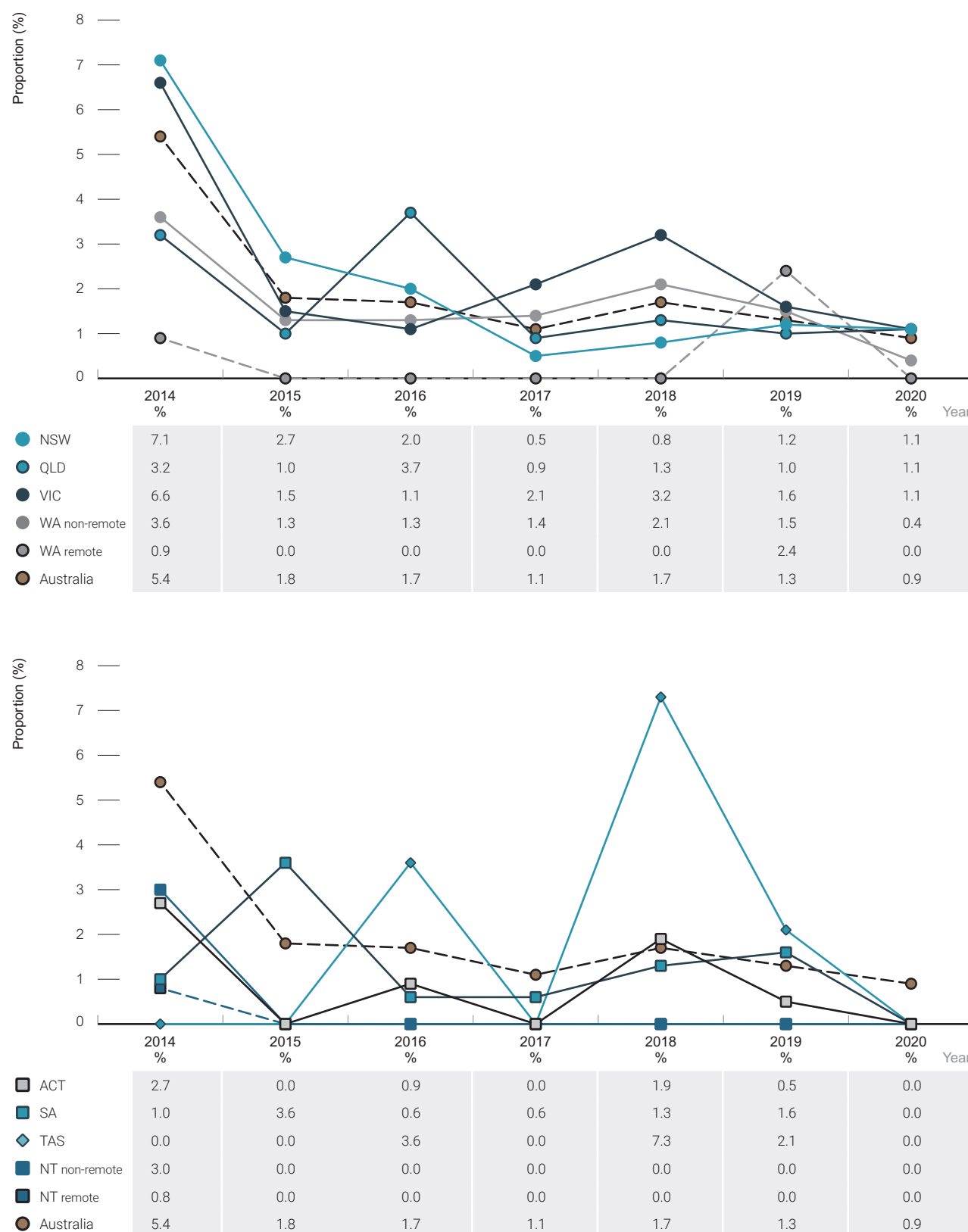
### 3.3 Antimicrobial resistance

Since 1981, the Australian Gonococcal Surveillance Programme has monitored antimicrobial resistance in clinical isolates of *N. gonorrhoeae* in all states and territories. Ceftriaxone in combination with azithromycin is currently the recommended treatment for gonorrhoea in most places in Australia (except for some areas in northern and central Australia where amoxicillin and azithromycin are used).

Between 2014 and 2020, the proportion of gonococcal isolates tested for antimicrobial resistance with decreased susceptibility to ceftriaxone declined from 5.4% in 2014 to 0.9% in 2020. Decreased susceptibility to ceftriaxone remained low across all Australian states and territories in 2020 (Figure 13)<sup>(7)</sup>.



**Figure 13** Proportion of gonococcal isolates tested at the Australian Gonococcal Surveillance Programme with decreased susceptibility to ceftriaxone, 2014–2020, by state/territory



Note: Decreased susceptibility was defined as having an MIC (minimum inhibitory concentration) between 0.06 and 0.125 mg/L.

Source: Australian Gonococcal Surveillance Programme. <sup>(7)</sup>

## 3.4 Gonorrhoea incidence

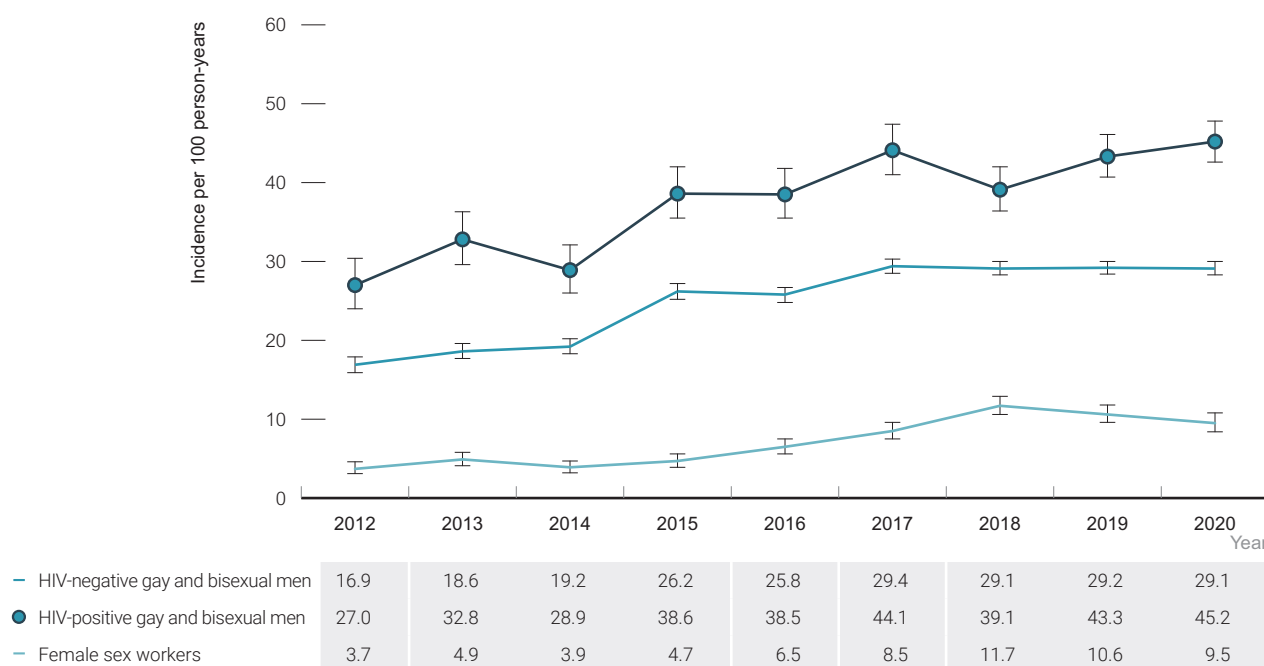
Gonorrhoea incidence is an important indicator of new transmissions, reflecting the impact of current prevention programs, whereas prevalence reflects the burden of disease. Gonorrhoea incidence is available from the ACCESS network and is calculated by dividing the number of incident infections (negative test followed by a positive test) among people undergoing repeat gonorrhoea testing at sexual health services by the person's time at risk (determined by the time between repeat gonorrhoea tests). These incidence estimates represent populations attending sexual health clinics and may not be generalisable to the broader priority populations. Further details about the methods used can be found in the methodology section of [the Kirby Institute data site](#).

In 2020, gonorrhoea incidence was 45.2 new infections per 100 person-years in HIV-positive gay and bisexual men, and was 55% greater than among HIV-negative gay and bisexual men (29.1 per 100 person-years). Between 2012 and 2020, gonorrhoea incidence has increased in both HIV-positive (67% increase) and HIV-negative (72% increase) gay and bisexual men (Figure 14).

Among female sex workers, gonorrhoea incidence increased by 157% from 3.7 per 100 person-years in 2012 to 9.5 per 100 person-years in 2020 (Figure 14).

Caution should be taken with interpretation as confidence intervals overlap between some years, indicating that between-year differences are not statistically significant.

**Figure 14** Gonorrhoea incidence in sexual health clinic attendees, 2012–2020, by population



Source: ACCESS (Australian Collaboration for Coordinated Enhanced Sentinel Surveillance).

## 3.5 Gonorrhoea diagnosis and care cascade

This report includes the gonorrhoea diagnosis and care 'cascade' for gay and bisexual men, which estimates the number and proportion of gay and bisexual men with new gonorrhoea infections in Australia, and the number and proportion who were diagnosed, received treatment and had a retest within six weeks to six months after diagnosis, as recommended in clinical guidelines <sup>(1)</sup>.

These estimates are used to support improvement in the delivery of services to gay and bisexual men infected with gonorrhoea across the entire continuum of care—from diagnosis of infection and uptake of treatment to retesting. As gonorrhoea is concentrated largely among urban gay and bisexual men and in young people living in remote Aboriginal

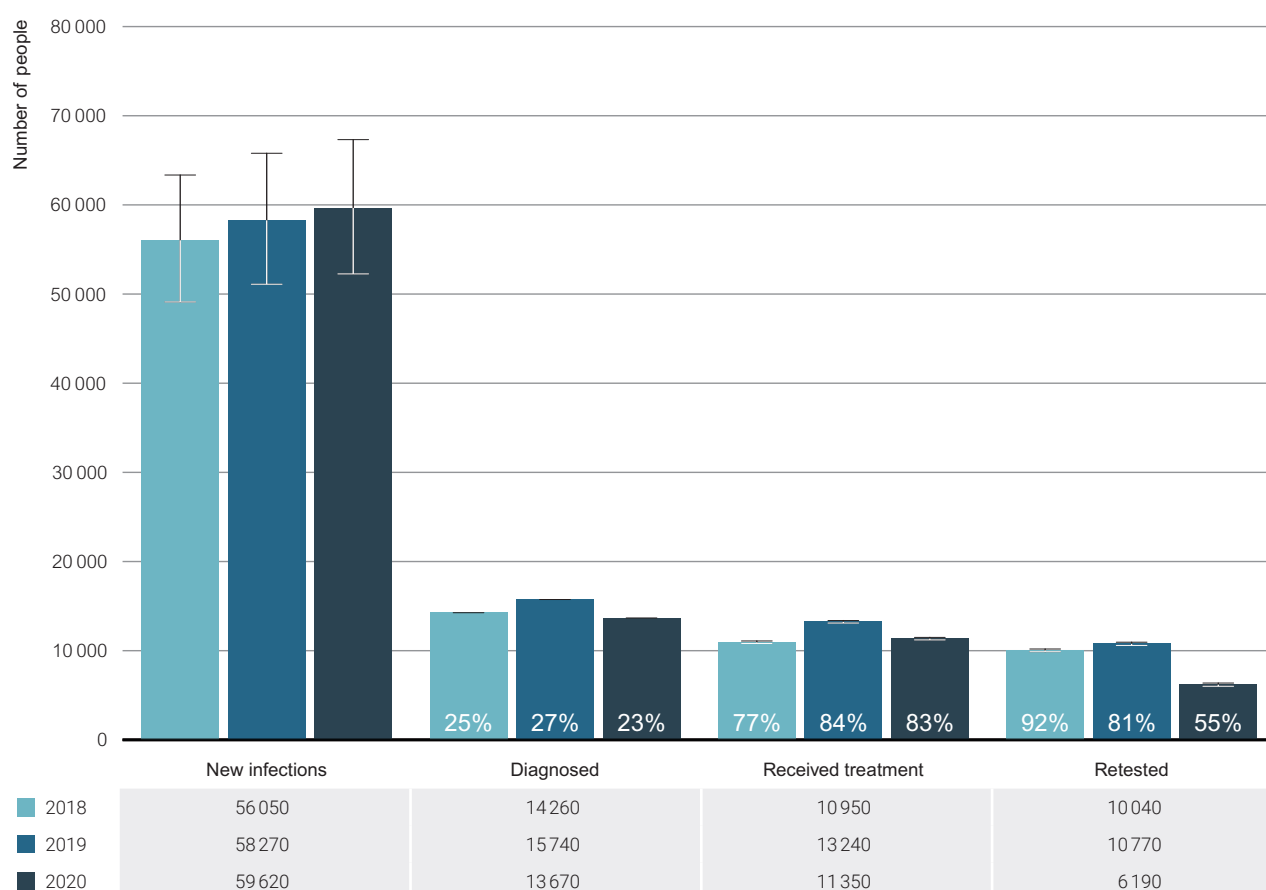
communities, these populations are the focus of these cascades. Further data are needed to prepare data for a cascade for young people living in remote Aboriginal communities, which will be explored in future reports.

Using available data and accounting for uncertainties, the proportions of gay and bisexual men in each stage of the cascade in Australia were estimated (Figure 16). Methods and the associated uncertainties are described in detail in the [Methodology](#). The approach was informed by recommendations from a national stakeholder reference group (see Acknowledgments section). The cascade focuses on gay and bisexual men, as guidelines recommend regular testing in this group and a significant proportion of gonorrhoea notifications occur in this group.

In 2020, there were an estimated 59 620 new gonorrhoea infections among gay and bisexual men, up from 56 050 new infections in 2018. Of those, an estimated 22% (13 670) were diagnosed, down from 25% (14 260) in 2020. Of those diagnosed, 83% (11 350) received treatment, up from 77% (10 950) in 2018. Of those who received treatment, only 55% (6 190) had a retest between six weeks and six months after diagnosis, down from 92% (10 040) in 2018 (Figure 15). This large decline in the proportion retested, is likely a consequence of the COVID-19 pandemic.

The cascade shows that the greatest gap in the gonorrhoea cascade among gay and bisexual men was at the diagnosis step. It is important to note that many men may clear gonorrhoea naturally without treatment, particularly for those with throat infections<sup>(8)</sup>, and may have had a test during 2020 which was negative (not counted in the diagnosis step). Conversely, most men with urethral infections would have rapidly developed symptoms and sought diagnosis and treatment<sup>(9)</sup>. Even so, it would be ideal for these infections to be detected soon after infection to prevent further transmission. It is also important to note that the total infections were calculated based on incidence estimates from men undergoing repeat testing at sexual health clinics (see [Methodology](#) for details), who are likely to be at higher risk of gonorrhoea, so the total of new infections is likely to be an overestimation.

**Figure 15** The gonorrhoea diagnosis and care cascade in gay and bisexual men, 2018-2020



Source: See [Methodology](#) for further details of mathematical modelling used to generate estimates.

# 4 Infectious Syphilis

See page 3 for summary.

## 4.1 Infectious syphilis notifications

An expanded infectious syphilis national case definition was implemented in July 2015 which includes a new subcategory of 'probable' infectious syphilis to capture infectious syphilis cases in people without a prior testing history, particularly young people aged 15–19 years. The probable infectious syphilis cases are included in the number of infectious syphilis notifications for the years 2015–2020.

There were 5248 infectious syphilis notifications (infections of less than two years' duration) in Australia in 2020. In 2020, 4284 (82%) infectious syphilis notifications were among males, 2633 (50%) were among people aged 25 to 39 years, and 3995 (76%) were among people residing in major cities. Also in 2020, 883 (17%) notifications were among the Aboriginal and Torres Strait Islander population, 4012 (76%) were among the non-Indigenous population and 353 notifications (7%) did not have Indigenous status reported (Table 3).

In 2020, half (49%) of notifications of infectious syphilis in the Aboriginal and Torres Strait Islander population were among males compared, with the majority (88%) of notifications being among males in the non-Indigenous population. See [Bloodborne viral and sexually transmissible infections in Aboriginal and Torres Strait Islander people: annual surveillance report 2021](#) for further details<sup>(5)</sup>.

**Table 3** Characteristics of syphilis notifications, 2011–2020

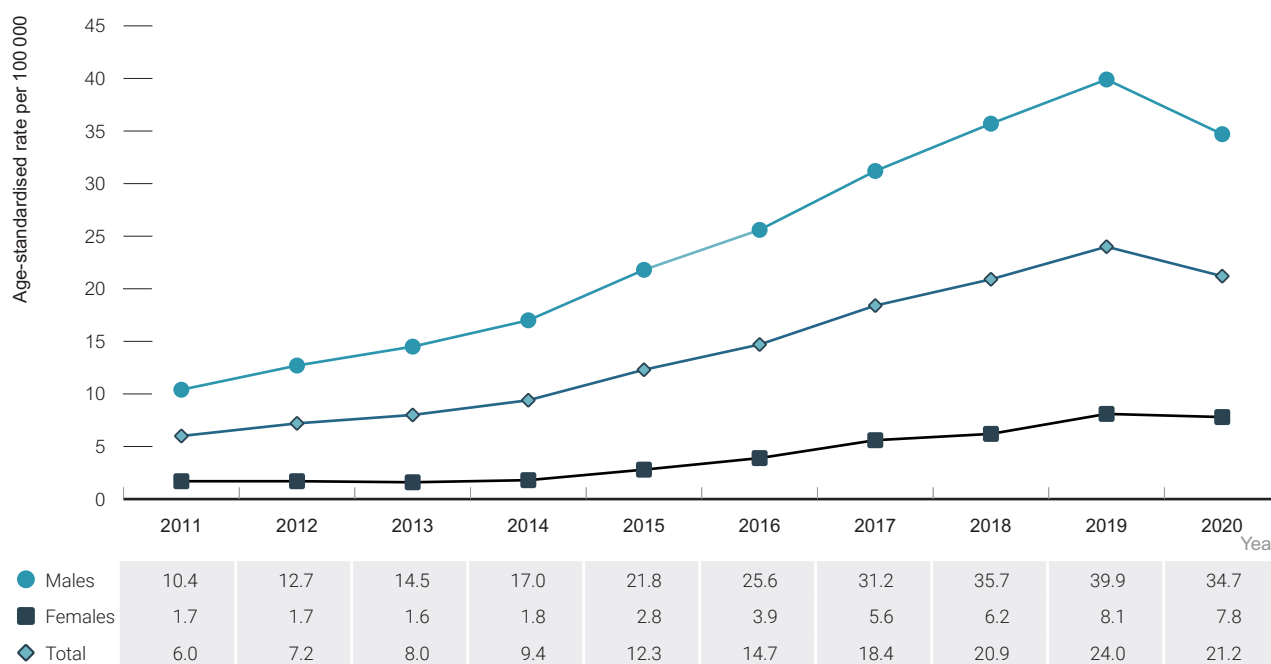
	Year of diagnosis									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Characteristic										
<b>Total cases</b>	1332	1614	1823	2145	2865	3472	4418	5102	5912	5248
<b>Gender</b>										
Male	1143	1419	1646	1949	2537	3010	3739	4337	4898	4284
Female	186	193	176	195	325	452	660	743	982	945
Missing <sup>a</sup>	3	2	1	1	3	10	19	22	32	19
<b>Age group</b>										
0–14	11	6	9	11	18	17	23	8	31	16
15–19	93	76	74	103	147	181	243	226	299	284
20–24	165	195	207	253	413	437	567	686	700	604
25–29	179	223	233	315	474	626	817	933	1079	927
30–34	166	218	285	307	449	548	733	831	1063	952
35–39	164	185	230	278	325	441	548	667	817	754
40+	551	711	785	878	1039	1222	1486	1750	1922	1708
Missing <sup>a</sup>	3	0	0	0	0	0	1	1	1	3
<b>Remoteness</b>										
Major cities	981	1217	1306	1608	1885	2443	3218	3844	4479	3995
Regional	162	211	246	262	401	575	776	759	801	688
Remote	143	103	90	119	266	253	298	362	482	440
Missing	46	83	181	156	313	201	126	137	150	125
<b>Aboriginal and Torres Strait Islander status</b>										
Aboriginal and/or Torres Strait Islander	227	218	181	276	484	566	796	807	1033	883
Non-Indigenous	1054	1315	1525	1734	2182	2643	3362	4016	4512	4012
Not reported	51	81	117	135	199	263	260	279	367	353
<b>Congenital syphilis</b>										
Aboriginal and/or Torres Strait Islander	3	0	4	3	2	1	5	4	1	8
Non-Indigenous	3	0	3	0	1	1	3	5	2	8
Not reported	0	0	0	0	0	0	0	0	1	1

<sup>a</sup> Cases for which age and gender are missing are being followed up.

Source: Australian National Notifiable Diseases Surveillance System.

Between 2011 and 2019, the infectious syphilis notification rate quadrupled from 6.0 to 24.0 per 100 000, followed by a 12% decline between 2019 and 2020 to 21.2 per 100 000. The decline in the notification rate in 2020 is likely due to a decrease in testing rates related to the ongoing COVID-19 pandemic and may not be reflective of the trend in new infectious syphilis infections. Similar trends were seen among both males and females. Notification rates have remained higher among males than females for every year since 2011 and in 2020, rates were 34.7 and 7.8 per 100 000, respectively (Figure 16).

**Figure 16 Infectious syphilis notification rate per 100 000 population by gender, 2011–2020**



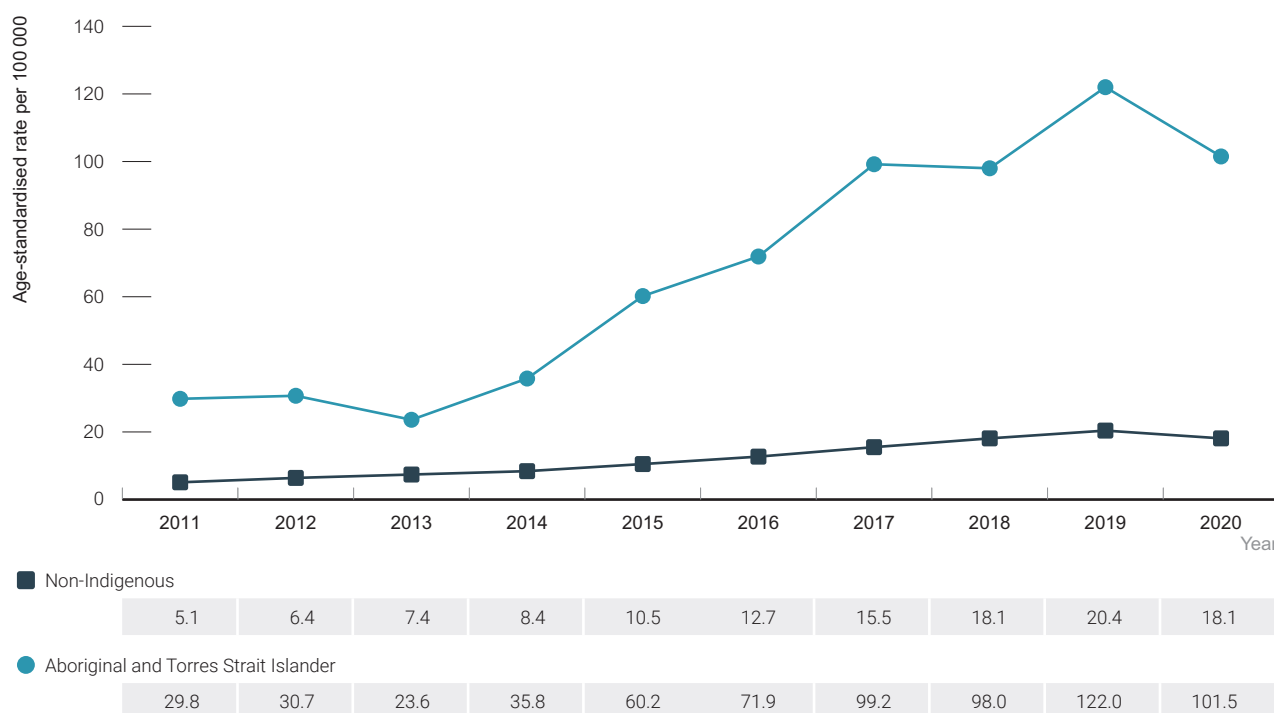
Source: Australian National Notifiable Diseases Surveillance System.

In 2020, the infectious syphilis notification rate was highest among people aged 25 to 29 years (48.6 per 100 000, 30 to 39 years (45.4 per 100 000) and 20 to 24 years (35.3 per 100 000). Among males in 2020, the notification rates of infectious syphilis were highest in those aged 25 to 29 years (77.6 per 100 000), 30 to 39 years (77.0 per 100 000) and 20 to 24 years (48.4 per 100 000). Notification rates were highest among women aged 20 to 24 years (21.4 per 100 000), 25 to 29 years (18.5 per 100 000) and 15 to 19 years (21.0 per 100 000). Breakdowns of infectious syphilis notification rates by age and gender can be found on [the Kirby Institute data site](#).

In 2020, 23% of infectious syphilis notifications among the Aboriginal and Torres Strait Islander population were among people aged 15 to 19 years, compared to 2% among the non-Indigenous population. See [Bloodborne viral and sexually transmissible infections in Aboriginal and Torres Strait Islander people: annual surveillance report 2021](#) for further details<sup>(5)</sup>

Between 2011 and 2019, the notification rate of infectious syphilis among the Aboriginal and Torres Strait Islander population increased more than four-fold from 29.8 to 122 per 100 000. In 2020, the notification rate of infectious syphilis among the Aboriginal and Torres Strait Islander population was 101.5 per 100 000, 5.5 times as high compared with the non-Indigenous population rate of 18.1 per 100 000 (Figure 17).

**Figure 17 Infectious syphilis notification rate per 100 000 population by Aboriginal and Torres Strait Islander status, 2011–2020**



Source: Australian National Notifiable Diseases Surveillance System. Includes all jurisdictions, as Indigenous status was reported for ≥50% of notifications for each year.

In 2020, notification rates of infectious syphilis were higher in remote areas (107.7 per 100 000) when compared with major cities (21.4 per 100 000) and regional areas (12.4 per 100 000) (Figure 18).

For all males, in 2020, the notification rate was 37.9 per 100 000 in major cities, 16.7 per 100 000 in regional areas, and 93.2 per 100 000 in remote locations. (Figure 19). For comparison, in the same year and among females, the notification rate was 5.1 per 100 000 in major cities, 8.3 per 100 000 in regional areas, and 123.4 per 100 000 in remote areas (Figure 20).

By remoteness classification among the Aboriginal and Torres Strait Islander population, the infectious syphilis notification rate for people residing in remote areas (266.1 per 100 000) was higher compared to those living in major cities (66.6 per 100 000) and regional areas (70.3 per 100 000). By comparison, the highest notification rate for non-Indigenous people by remoteness classification was the highest in major cities (20.6 per 100 000). (See [Bloodborne viral and sexually transmissible infections in Aboriginal and Torres Strait Islander people: annual surveillance report 2021](#) for further details<sup>(5)</sup>).

**Figure 18 Infectious syphilis notification rate per 100 000 population by region of residence, 2011-2020**



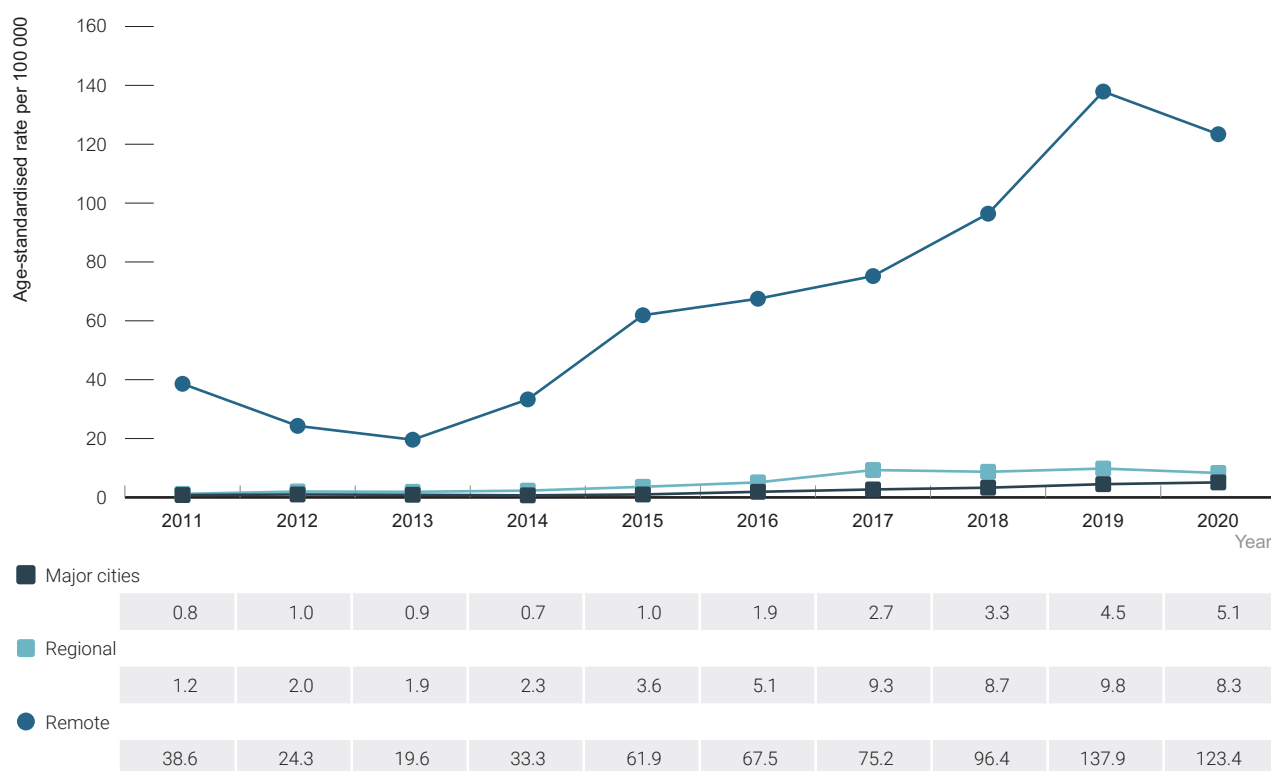
Source: Australian National Notifiable Diseases Surveillance System.

**Figure 19 Infectious syphilis notifications per 100 000 males by region of residence, 2011–2020**



Source: Australian National Notifiable Diseases Surveillance System.

**Figure 20 Infectious syphilis notifications per 100 000 females by region of residence, 2011–2020**



Source: Australian National Notifiable Diseases Surveillance System.

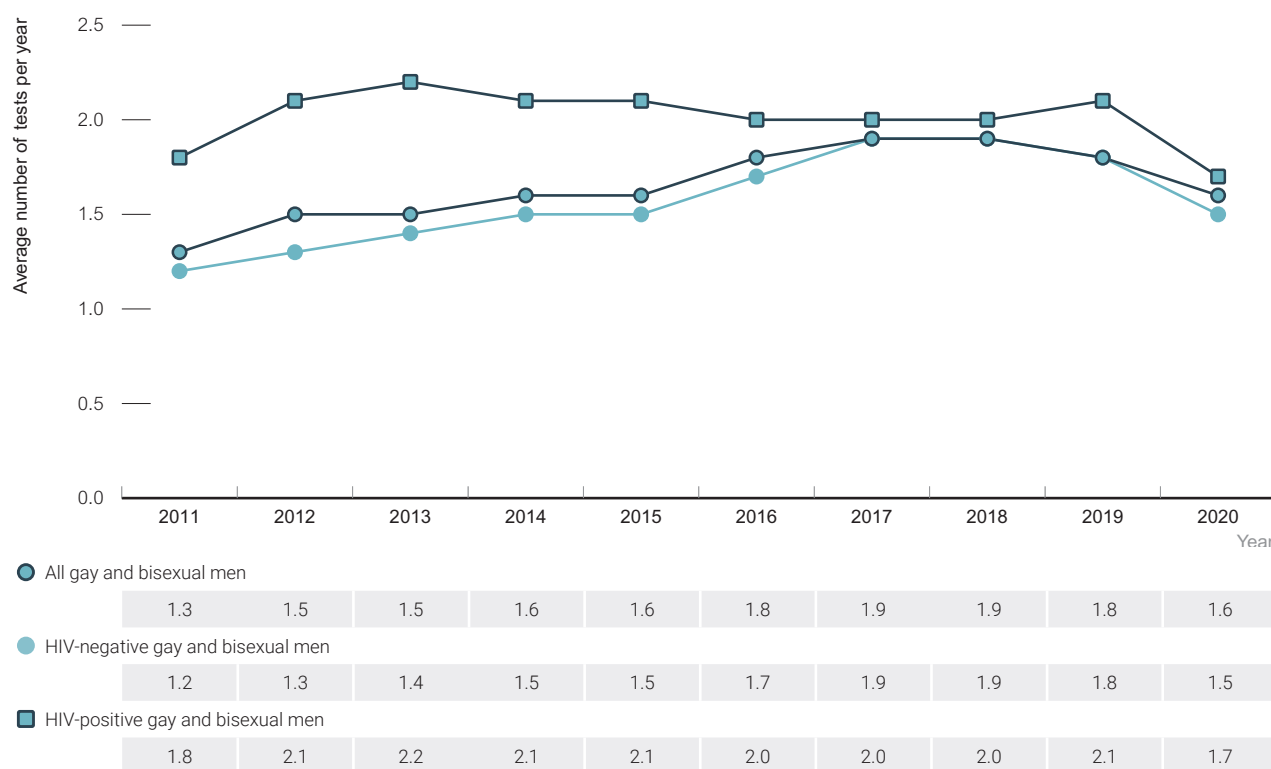


## 4.2 Syphilis testing

Clinical guidelines recommend at least annual STI testing for all sexually active gay and bisexual men, increasing to every three months for men with higher risk behaviour, and at each monitoring visit for HIV-positive gay and bisexual men<sup>(2)</sup>. Testing for HIV, syphilis, and hepatitis B is recommended as part of routine antenatal screening, including chlamydia testing for women less than 30 years of age<sup>(1)</sup>. For sexually active people aged under 30 years, annual opportunistic chlamydia testing is recommended, and testing for gonorrhoea is recommended in areas of high prevalence<sup>(1)</sup>.

The number of syphilis tests per year among gay and bisexual men can give an indication of compliance with recommendations in the clinical guidelines<sup>(2)</sup>. The average number of syphilis tests per year among gay and bisexual men attending sexual health clinics and high-caseload general practice clinics in the ACCESS network remained stable between 2011 and 2019 but declined by 11% between 2019 and 2020 from 1.8 to 1.6 tests per year. This decline seen among both HIV-negative gay and bisexual men (1.8 to 1.5 tests per year) and HIV-positive gay and bisexual men (2.1 to 1.7 tests per year) (Figure 21). The decline in testing is likely related to the challenges accessing healthcare because of the ongoing COVID-19 pandemic.

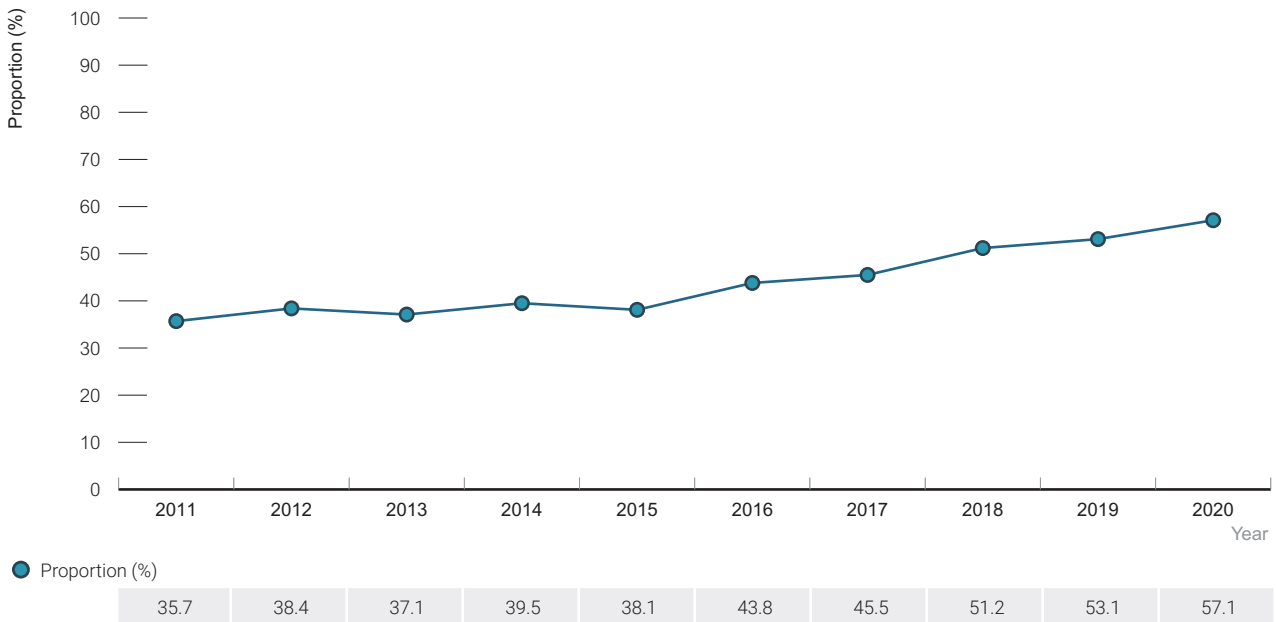
**Figure 21** Average number of syphilis tests per year among gay and bisexual men, 2011–2020, by HIV status



Source: ACCESS (Australian Collaboration for Coordinated Enhanced Sentinel Surveillance).

In 2020, the Gay Community Periodic Surveys report that 57.1% of gay and bisexual men complete comprehensive STI testing (at least four samples collected) in the 12 months prior to the survey. This proportion has increased from 35.7% in 2011 (Figure 22). The change is largely attributed to increased collection of rectal and throat swabs. For more information, see [Annual reports of trends in behaviour](#)<sup>(10)</sup>.

**Figure 22** Gay and bisexual men reporting comprehensive STI testing in the 12 months prior to the survey, 2011–2020



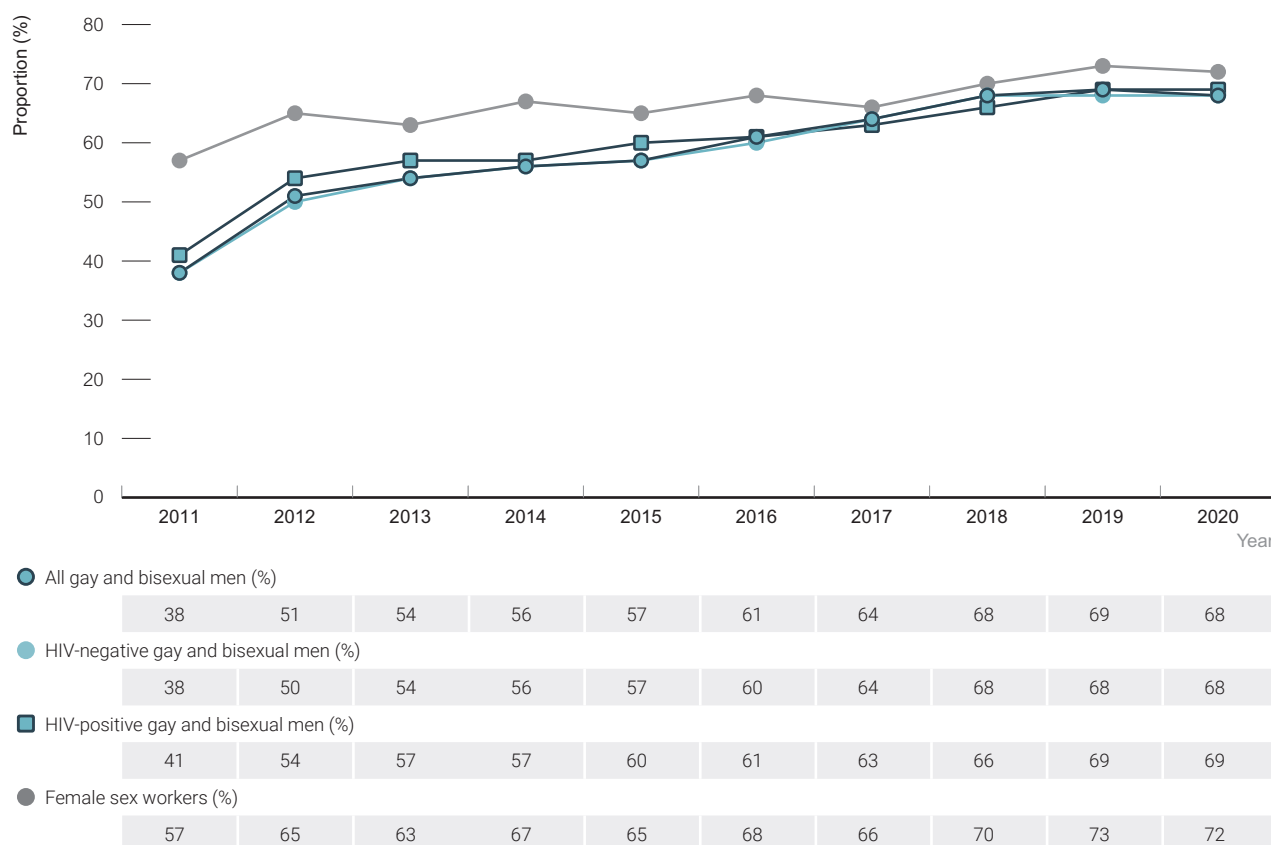
Note: Comprehensive testing is defined as the collection of samples of at least four of the following: anal swab, throat swab, penile swab, urine, blood, among men tested for STI in the previous 12 months

Source: Gay Community Periodic Surveys.

## Repeat comprehensive testing

At 54 sexual health clinics in the ACCESS network, 68% of gay and bisexual men in 2020 had a repeat comprehensive STI screen (includes chlamydia and gonorrhoea test on any anatomical site, syphilis and HIV among HIV-negative men) within 13 months of a previous comprehensive screen, increasing from 38% in 2011 (Figure 23). The proportion with repeat comprehensive screening was similar between HIV-positive and HIV-negative gay and bisexual men between 2011 and 2020 (Figure 23). Among female sex workers attending sexual health clinics in the ACCESS network, the proportion who had a repeat comprehensive STI screen increased from 57% in 2011 to 72% in 2020. Although the proportion of female sex workers who had a repeat comprehensive STI screen was similar between 2019 and 2020, the number of people attending ACCESS clinics declined by 23% over this period (data not shown).

**Figure 23** Repeat comprehensive STI screen within 13 months of a test among gay and bisexual men and female sex workers attending sexual health clinics, 2011–2020, by HIV status



Note: Repeat screening pertains to prospective 13-month period. A comprehensive screen is defined as a test for chlamydia and gonorrhoea (any anatomical site), syphilis and HIV (among HIV-negative men).

Source: ACCESS (Australian Collaboration for Coordinated Enhanced Sentinel Surveillance).

## 4.3 Infectious syphilis incidence

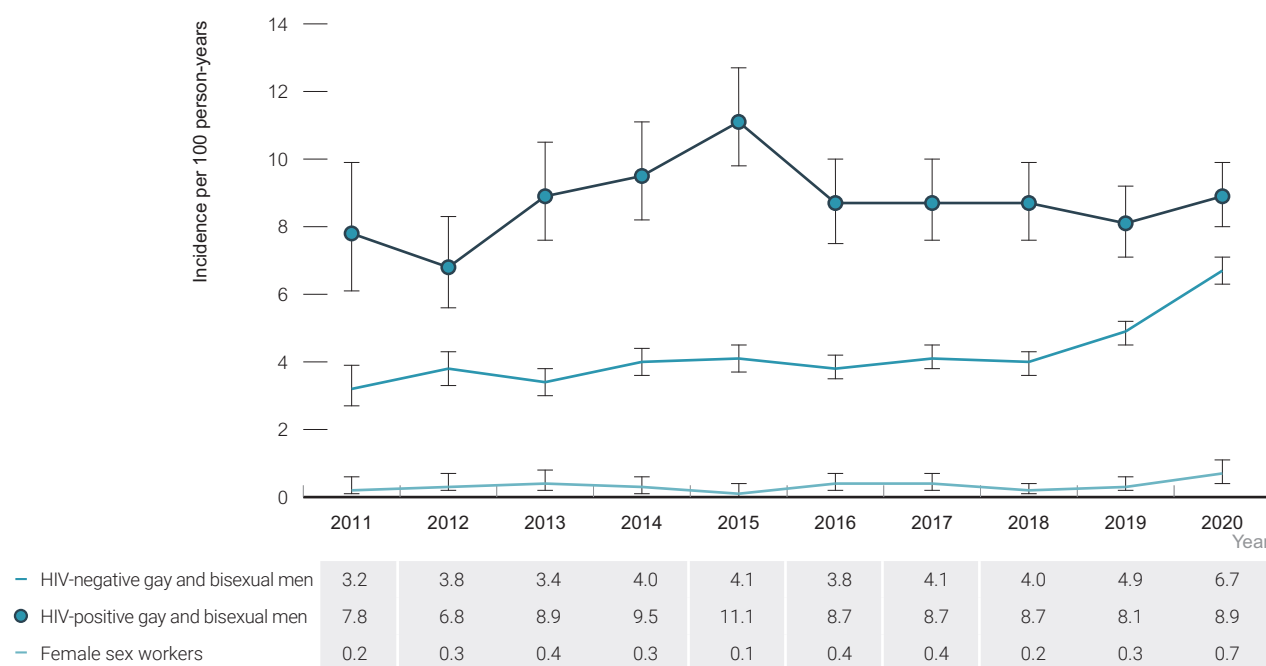
Infectious syphilis incidence is an important indicator of new transmissions, reflecting the impact of current prevention programs, whereas prevalence reflects the burden of disease. Infectious syphilis incidence is available from the ACCESS network and is calculated by dividing the number of incident infections (negative test followed by a syphilis diagnosis) among people undergoing repeat syphilis testing at sexual health services by the person's time at risk (determined by the time between repeat syphilis tests). These incidence estimates represent populations attending sexual health clinics and may not be generalisable to broader priority populations. Further details about the methods used can be found in methodology section of [the Kirby Institute data site](#).

In 2020, the incidence of infectious syphilis among HIV-positive gay and bisexual men attending sexual health clinics was 8.9 new infections per 100 person-years, 33% greater than 6.7 per 100 person-years in HIV-negative gay and bisexual men. Between 2011 and 2020, infectious syphilis incidence increased among HIV-negative gay and bisexual men by 109% (from 3.2 per 100 person-years). By comparison, infectious syphilis incidence increased among HIV-positive gay and bisexual men by 14% (from 7.8 per 100 person-years in 2011) (Figure 24).

In 2020, the infectious syphilis incidence rate among female sex workers was 0.7 per 100 person-years, up from 0.2 per 100 person-years in 2011 (Figure 24). Small numbers of female sex workers included in incidence calculations mean that this trend should be interpreted with caution.

Caution should be taken with interpretation as confidence intervals overlap, indicating that between-year differences are not statistically significant.

**Figure 24 Infectious syphilis incidence in sexual health clinic attendees, 2011–2020, by population**



Source: ACCESS (Australian Collaboration for Coordinated Enhanced Sentinel Surveillance).

## 4.4 Congenital syphilis

Between 2011 and 2020 there were 58 cases of congenital syphilis notified in Australia. Of those, 31 (53%) were among the Aboriginal and Torres Strait Islander population. Of the 17 congenital syphilis cases notified in 2020, eight cases of congenital syphilis were among the Aboriginal and Torres Strait Islander population, eight were among the non-Indigenous population and one case did not have Aboriginal and Torres Strait Islander status reported. See *Bloodborne viral and sexually transmissible infections in Aboriginal and Torres Strait Islander people: annual surveillance report 2021* for further details<sup>(5)</sup>.

The congenital syphilis notification rate among the Aboriginal and Torres Strait Islander population was 36.3 per 100 000 live births in 2020, the highest rate in ten years. In 2020, the congenital syphilis notification rate among the Aboriginal and Torres Strait Islander population was more than 11 times as high as among the non-Indigenous notification rate of 2.8 per 100 000 (Figure 25).

**Figure 25** Congenital syphilis rate per 100 000 live births, 2011–2020, by Aboriginal and Torres Strait Islander status



a Includes notifications where Aboriginal and Torres Strait Islander status was not reported.

Source: Australian National Notifiable Diseases Surveillance System.

# 5 Human papillomavirus infection

## 5.1 Genital warts diagnoses

Although genital warts is not a notifiable condition, the Genital Warts Surveillance Network has evaluated the impact of the national HPV vaccination program on genital warts diagnoses in various populations attending a national network of sexual health clinics (see [Methodology](#) for details). In Australia all girls aged 12 to 13 years have been routinely offered three doses of human papilloma virus (HPV) vaccination since 2007, as have boys of the same age since 2013.

Information available from 53 sexual health clinics included in the Genital Warts Surveillance Network has shown a 92% reduction in genital warts diagnoses at first visit among Australian-born non-Indigenous females under 21 years of age, from 10.1% in 2007 to 0.8% in 2020 (Figure 27). Among women aged 21 to 29 years there was an 88% decline from 11.0% in 2007 to 1.4% in 2020, reflecting the catch-up vaccination campaign in women aged up to 26 years between 2007 and 2009. Among females older than 30-years; there was more gradual decline from 2007 to 2020 leading to a 64% decline since 2007 (6.1% in 2007 to 2.2% in 2020) (Figure 26).

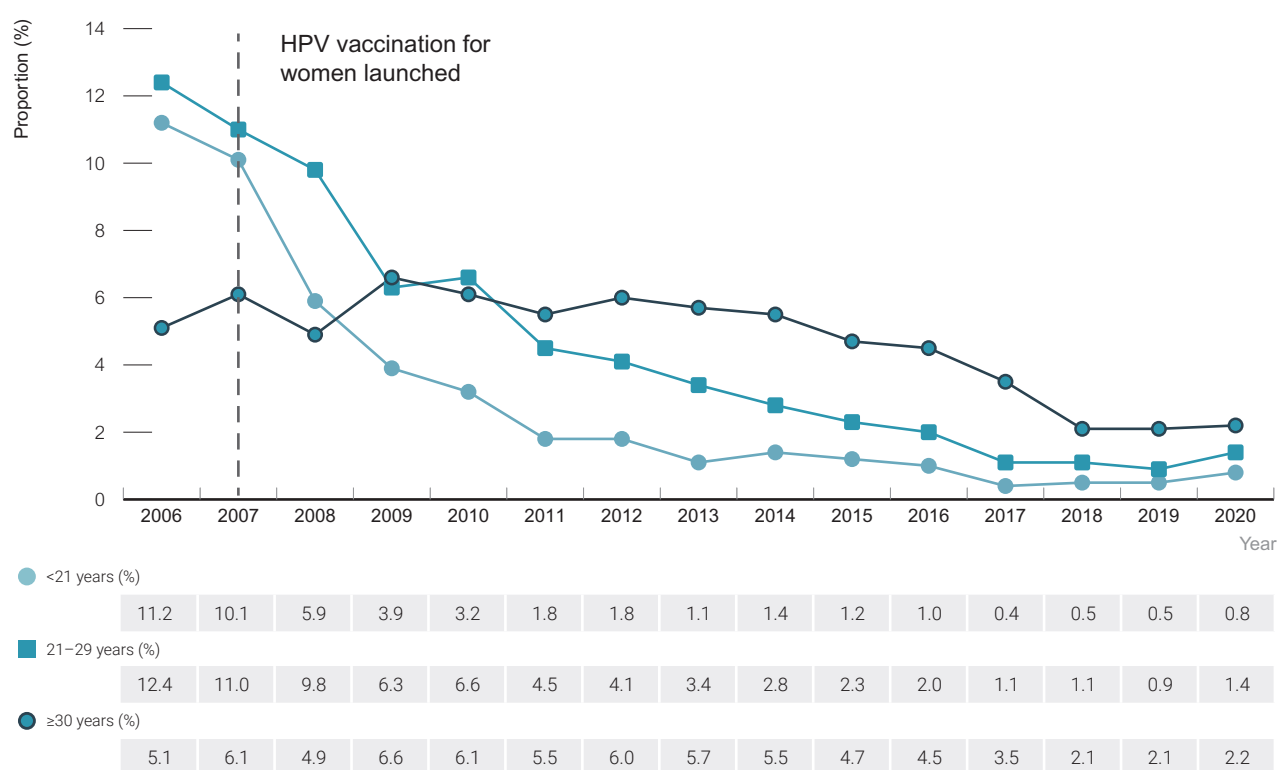
Among Australian-born non-Indigenous heterosexual males aged under 21 years, there was a 93% reduction in genital warts diagnoses at first visit from 4.4% in 2007 to 0.5% in 2018, (an 81% reduction since 2013 when male vaccination was introduced) (Figure 28). The proportion of genital warts diagnoses in men older than 30 years has shown a declining trend starting in 2011 and was 3.6% in 2020, a reduction of 62% since 2007 (Figure 27).

Among Aboriginal and Torres Strait Islander females, there was also a 100% reduction in genital warts diagnoses at first visit among those under 21 years from 6.4% in 2007 to 0% in 2020. Among those aged 21 to 29 years there was an 82.4% reduction from 6.3% in 2007 to 1.1% in 2020 (Figure 29). The proportion of genital warts diagnoses among Aboriginal and Torres Strait Islander women aged 30 years and older declined by 71% from 4.1% in 2007 to 1.2% in 2020 (Figure 28).

Among Aboriginal and Torres Strait Islander males there was an 100% reduction in genital warts diagnoses at first visit among those aged under 21 years from 6.4% in 2007. Among Aboriginal and Torres Strait Islander males aged 21 to 29 years, there was a 60% reduction from 4.4% in 2007 to 1.8% in 2020 (an 67% reduction since 2013 when male vaccination was introduced) (Figure 30). Among Aboriginal and Torres Strait Islander men older than 30 years, there was a 76% reduction from 5.6% in 2007 to 1.3% in 2020 (Figure 29).

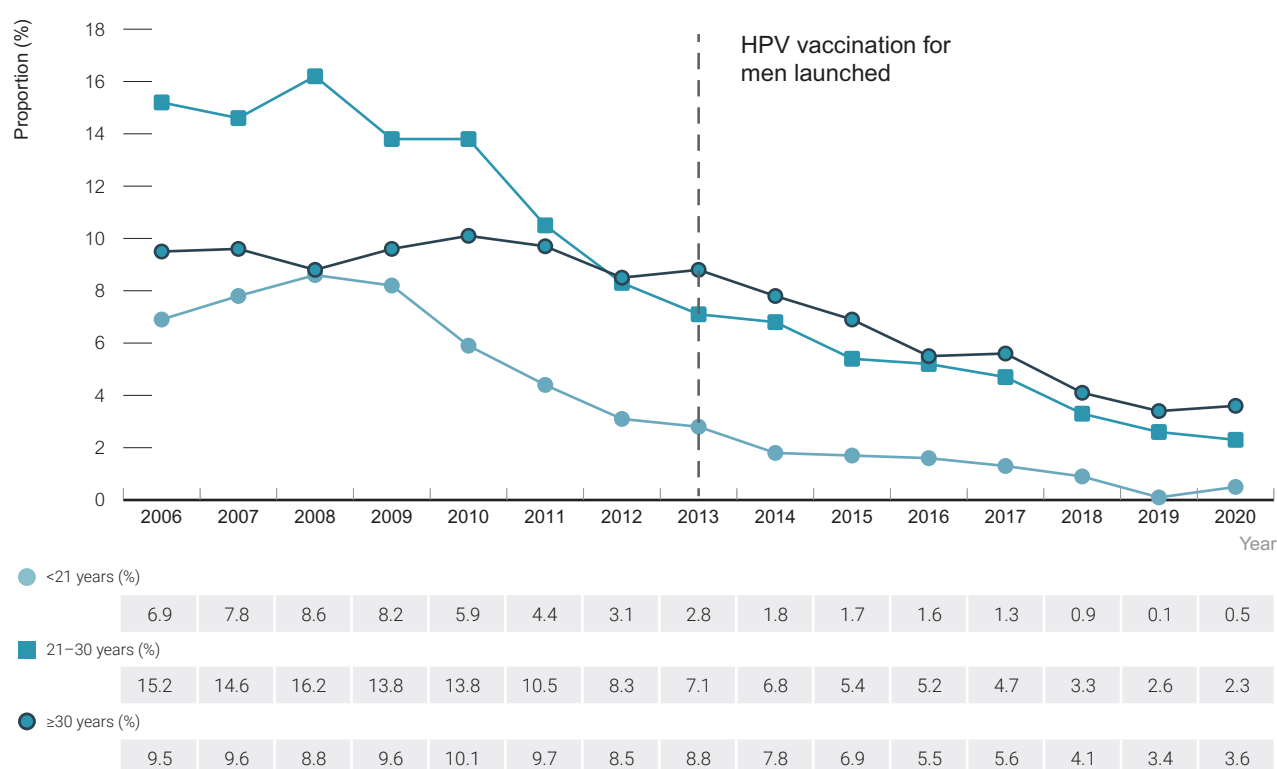
The proportion of genital warts diagnoses among non-Indigenous Australian-born gay and bisexual men at first visit has also declined since the introduction of male vaccination in 2013 (61% decline in gay men, 25% decline in bisexual men) (Figure 30). The gradual decline is largely explained by an increasing denominator as a greater number of asymptomatic gay and bisexual men are attending clinics for STI screening and HIV pre-exposure prophylaxis (PrEP) (See HIV Chapter for further detail).

**Figure 26** Proportion of Australian-born non-Indigenous females diagnosed with genital warts at first visit at sexual health clinics, 2006–2020, by age group



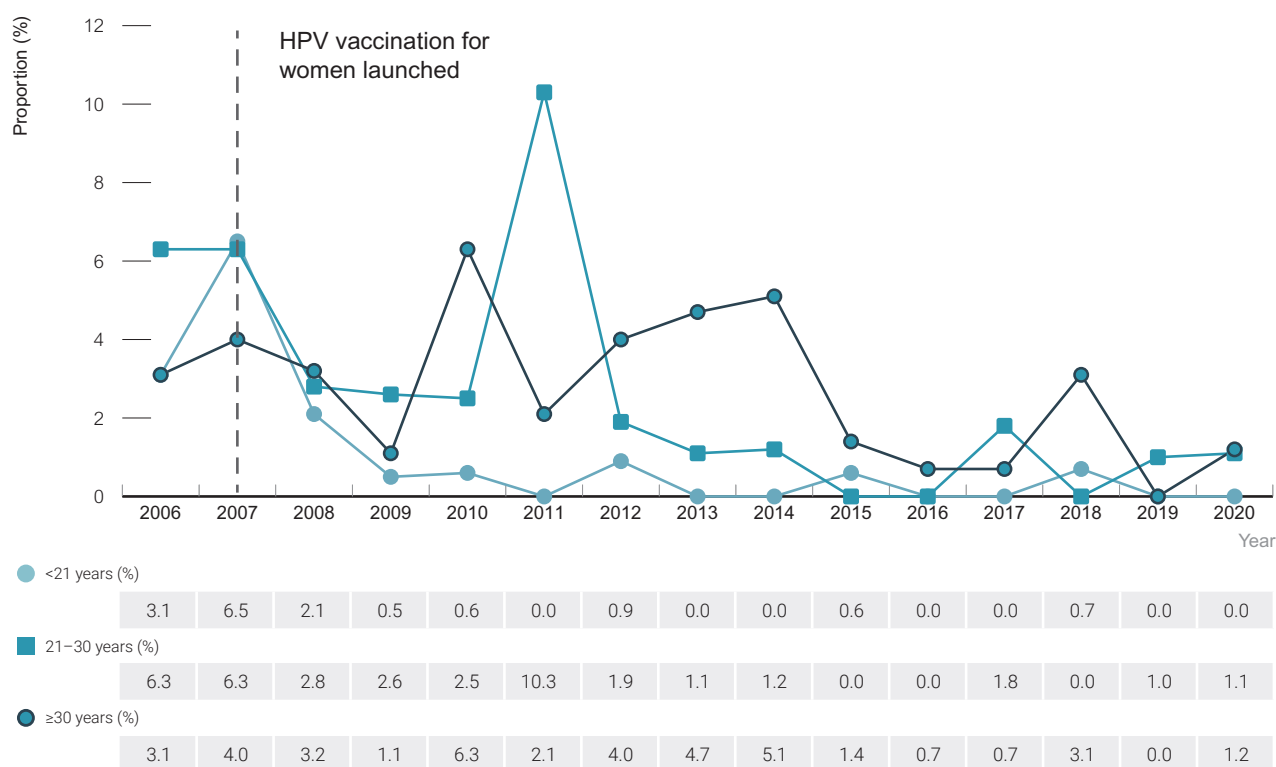
Source: Genital Wart Surveillance Network.

**Figure 27** Proportion of Australian-born non-Indigenous heterosexual males diagnosed with genital warts at first visit at sexual health clinics, 2006–2020, by age group



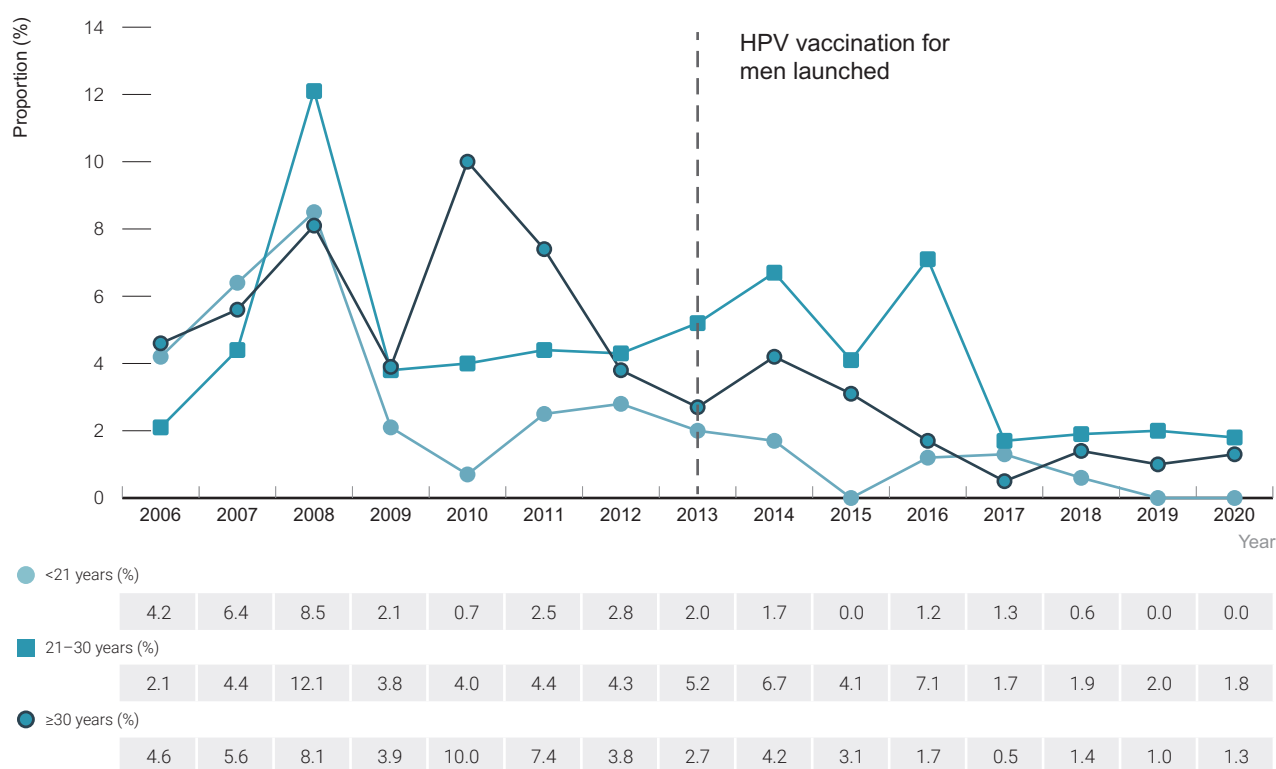
Source: Genital Wart Surveillance Network.

**Figure 28** Proportion of Aboriginal and Torres Strait Islander females diagnosed with genital warts at first visit at sexual health clinics, 2006–2020, by age group



Source: Genital Wart Surveillance Network.

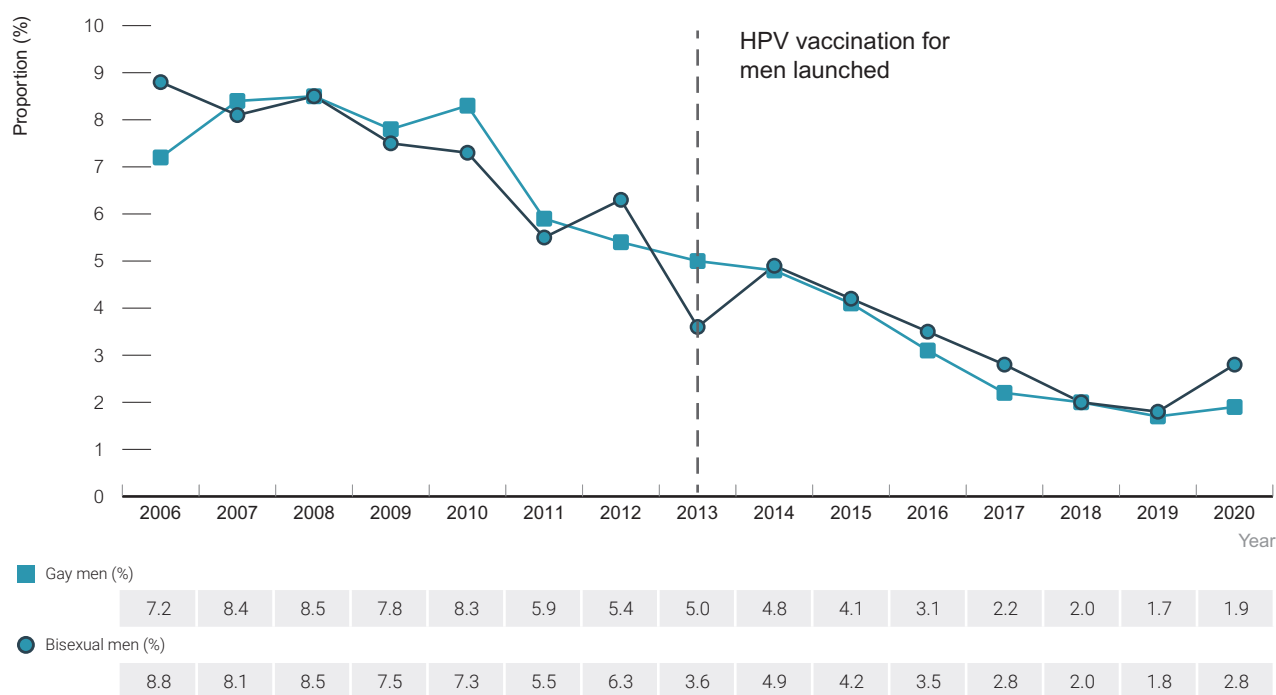
**Figure 29** Proportion of Aboriginal and Torres Strait Islander males diagnosed with genital warts at first visit at sexual health clinics, 2006–2020, by age group



Source: Genital Wart Surveillance Network.



**Figure 30** Proportion of Australian-born non-Indigenous gay or bisexual men diagnosed with genital warts at first visit at sexual health clinics, 2006–2020

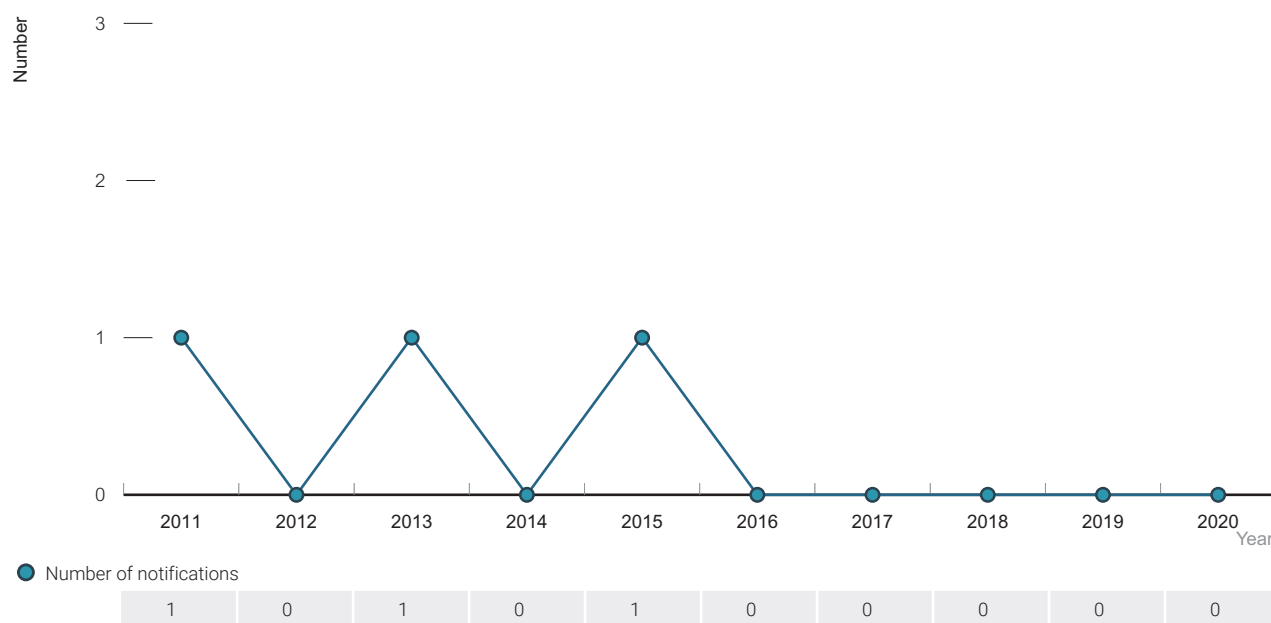


Source: Genital Wart Surveillance Network.

# 6 Donovanosis

Australia is on track to eliminate donovanosis, which was once a frequently diagnosed sexually transmissible infection among remote Aboriginal populations. Since 2011 there have been 3 cases notified one in 2011, one in 2013 and one in 2015 (Figure 31).

**Figure 31** Donovanosis notifications, 2011–2020



Source: Australian National Notifiable Diseases Surveillance System.

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