



UNSW
Kirby Institute

**HIV, viral hepatitis
and sexually transmissible
infections in Australia
Annual surveillance
report 2023**



**Sexually
Transmissible
Infections**



UNSW
SYDNEY

HIV, viral hepatitis and sexually transmissible infections in Australia

Annual surveillance report 2023

Kirby Institute, UNSW Sydney

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

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Sexually transmissible infections

We recognise communities and individuals impacted by and at risk of HIV, hepatitis B and C, and sexually transmissible infections. These people and communities are crucial stakeholders in the work we do, with invaluable contributions and lived experiences. We acknowledge and affirm their crucial role in the development of this report, and public health surveillance more broadly. This report aims to ensure that ongoing and emerging public health threats and inequities are apparent, and that high quality data are available to inform appropriate public health responses to address these issues. We also acknowledge the ongoing negative impacts stigma and societal discrimination play in perpetuating inequity, and support principles of empowerment, community ownership, and partnership.

The years for comparison in this report are from 2013 to 2022 unless focus is given to the impact of the COVID-19 epidemic, where the years for comparison are 2013 to 2019, and 2019 and 2022. Epidemiological trends may vary by state, territory, and region and may vary from national trends described below.

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1 Summary data

Infectious Syphilis

Infectious Syphilis notifications

- In 2022 there were 6036 infectious syphilis notifications (infections of less than two years' duration) in Australia. The majority (4943, 82%) of these notifications were among males.
- Between 2013 and 2019, the infectious syphilis notification rate more than tripled from 7.6 to 24.0 per 100 000, followed by a decline between 2019 and 2020 to 21.7 per 100 000, likely related to a decline in syphilis testing at the start of the COVID-19 pandemic. Between 2020 and 2022, the infectious syphilis notification rate increased from 21.7 to 24.3 per 100 000.
- Between 2013 and 2022 the infectious syphilis notification rate among females increased almost six-fold from 1.3 to 8.8 per 100 000.
- Noting variability across specific regions and jurisdictions, the national infectious syphilis notification rate in 2022 was more than four times as high among males (39.8 per 100 000) than among females (8.8 per 100 000).
- In 2022, infectious syphilis notification rates were highest among people aged 25 to 29 years (58.1 per 100 000), 30 to 39 years (55.7 per 100 000), and 20 to 24 years (38.2 per 100 000).
- The notification rate among Aboriginal and Torres Strait Islander peoples in 2022 was more than five times as high as among non-Indigenous people (108.22 per 100 000, compared to 21.0 per 100 000).
- In 2022, notification rates were highest in remote areas (114.1 per 100 000), followed by major cities (24.8 per 100 000), and regional areas (13.3 per 100 000).
- There were 15 congenital syphilis cases in 2022, eight among Aboriginal and Torres Strait Islander peoples and seven among non-Indigenous people. In 2022, the congenital syphilis notification rate among Aboriginal and Torres Strait Islander peoples was more than 14 times as high as among non-Indigenous people (34.0 and 2.4 per 100 000 live births, respectively).
- Of the 69 congenital syphilis cases notified between 2016 and 2022, 18 cases resulted in the death of the infant (including stillbirth). Of these, 11 deaths occurred among Aboriginal and Torres Strait Islander peoples, five occurred among non-Indigenous people, and three cases occurred among infants for whom Aboriginal and Torres Strait Islander status was not reported.

Testing

- In 2022, among gay and bisexual men attending sexual health clinics in ACCESS (Australian Collaboration for Coordinated Enhanced Sentinel Surveillance), 60% had a repeat comprehensive STI screen (includes chlamydia and gonorrhoea test at any anatomical site, syphilis, and HIV among HIV-negative men) within 13 months of a previous comprehensive screen, a decline from a peak of 65% in 2019.
- Results from the Gay Community Periodic Surveys show comprehensive STI testing among participants, defined as at least four samples from separate body sites, in the past 12 months among participating gay and bisexual men increased from 42% in 2013 to 42% in 2022.

Incidence

- In 2022, the incidence of infectious syphilis among HIV-positive gay and bisexual men and HIV-negative gay and bisexual men attending sexual health clinics in ACCESS was 7.1 and 4.8 new infections per 100 person-years, respectively. Between 2013 and 2022, infectious syphilis incidence increased among HIV-negative gay and bisexual men by 55% (up from 3.1 per 100 person-years) and fluctuated among HIV-positive gay and bisexual men (with a peak of 11.7 new infections per 100 person-years in 2015).
- Between 2013 and 2022, the incidence of infectious syphilis among women engaging in sex work attending sexual health clinics in the ACCESS network remained low and was 0.1 per 100 person-years in 2022.

Chlamydia

Chlamydia notifications

- In 2022, chlamydia was the most frequently notified sexually transmissible infection (STI) in Australia, with a total of 93 777 notifications. Around two-thirds (64 404, 69%) were among people aged 15 to 29 years. Half of notifications occurred among males (46 973 notifications, 50%).
- The chlamydia notification rate remained relatively stable between 2013 and 2015, gradually increased between 2015 and 2019, and then declined between 2019 and 2021. In 2022, the chlamydia notification rate increased to 386.5 notifications per 100 000 population. The decline in the notification rate between 2019 and 2021 is likely due to the impact of the COVID-19 pandemic and may not be reflective of the trend in chlamydia incidence.
- The chlamydia notification rate was higher among females than males every year from 2013 to 2021 but was roughly equal in 2022 (379.2 per 100 000 males and 395.8 per 100 000 females).
- In 2022, chlamydia notification rates were highest among people aged 20 to 24 years (1822.5 per 100 000), 25 to 29 years (1054.7 per 100 000), and 15 to 19 years (999.5 per 100 000).
- The chlamydia notification rate among Aboriginal and Torres Strait Islander peoples is based on data from six jurisdictions (the Australian Capital Territory, New South Wales, the Northern Territory, Queensland, South Australia, and Western Australia), where Aboriginal and Torres Strait Islander status was $\geq 50\%$ complete each of the past five years (2018 – 2022).
- The chlamydia notification rate among Aboriginal and Torres Strait Islander peoples declined between 2018 and 2022 from 940.7 to 814.1 per 100 000. In 2022, the chlamydia notification rate among Aboriginal and Torres Strait Islander peoples was more than twice as high as among non-Indigenous people (814.1 vs 374.9 per 100 000).
- The chlamydia notification rate was highest in remote areas for each of the ten years from 2013 to 2022. In 2022, the chlamydia notification rate was 1002.6 per 100 000 in remote areas, 390.2 in regional areas, and 365.3 in major cities.

Testing

- The number of Medicare-rebated chlamydia tests in Australia increased by 33% between 2013 and 2019, from 608 503 to 764 303. Between 2019 and 2022, the number of tests declined by 20% to 613 281, 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 2022 was 16%, slightly up from 14% in 2013. The overall low number of tests conducted suggests that the number of people aged 15 to 29 years seeking face-to-face health care declined in 2022.
- The amount of testing in a population can influence notification trends. In 2022, the number of chlamydia notifications per 100 Medicare-rebated chlamydia tests increased from 6.1 in 2021, the lowest in the ten-year period, to 6.9 in 2022. The lower ratio in 2020 and 2021 was likely related to the COVID-19 pandemic.

Incidence

- In 2022, chlamydia incidence among HIV-positive gay and bisexual men (40.9 new infections per 100 person-years) was higher than among HIV-negative gay and bisexual men (29.2 per 100 person-years).
- In 2022, among men attending sexual health clinics in the ACCESS network, there was a 20% increase in chlamydia incidence among HIV-positive gay and bisexual men and 65% increase in HIV-negative gay and bisexual men since 2013.
- Among women reporting sex work attending sexual health clinics in the ACCESS network, chlamydia incidence increased by 38% between 2013 and 2022 (from 7.4 to 10.1 per 100 person-years).

Testing and care cascade

- In 2022, there were an estimated 91 010 new chlamydia infections in women aged 15–29 years. Of those, an estimated 33 180 (42%) were diagnosed, 35 640 (93%) received treatment, and 6970 (19%) had a retest between six weeks and six months after diagnosis.

Gonorrhoea

Gonorrhoea notifications

- In 2022 there were 32 877 gonorrhoea notifications in Australia, with over two-thirds of all notifications in males (23 206, 71%).
- Between 2013 and 2019 there was a 114% increase in the gonorrhoea notification rate (from 66.1 to 141.5 per 100 000), followed by a 23% decline from 2019 to 2021 (to 109.4 per 100 000). Between 2021 and 2022 the gonorrhoea notification rate increased by 22% to 133.8 per 100 000. The decline in the notification rate between 2019 and 2021 was likely related to the COVID-19 pandemic and may not be reflective of the trend in gonorrhoea incidence.
- Similar trends were observed among males and females. The gonorrhoea notification rate has been higher among males than females in each year since 2013 and was 187.3 per 100 000 males and 79.8 per 100 000 females in 2022.
- The gonorrhoea notification rate among Aboriginal and Torres Strait Islander peoples is based on data from seven jurisdictions (the Australian Capital Territory, New South Wales, the Northern Territory, Queensland, South Australia, Tasmania, and Western Australia), where Aboriginal and Torres Strait Islander status was ≥50% complete each of the past five years (2018 – 2022).
- The gonorrhoea notification rate among Aboriginal and Torres Strait Islander peoples in 2022 was more than five times as high as among non-Indigenous people (547.1 per 100 000 and 108.3 per 100 000, respectively).
- Between 2013 and 2022, gonorrhoea notification rates increased in major cities (456% increase), regional areas (83% increase) and remote areas (25% increase).
- In 2022, gonorrhoea notification rates were highest in remote areas (738.6 per 100 000), followed by major cities (134.2 per 100 000) and regional areas (74.8 per 100 000).

Testing

- Between 2013 and 2022, the number of gonorrhoea notifications per 100 Medicare-rebated gonorrhoea tests increased by 71% (from 1.4 to 2.4), with increases in both males (64%) and females (67%). These data suggest that the increases observed in notifications cannot be fully explained by more testing. The ratio was higher in males than in females for each reported year.

Incidence

- In 2022, among men attending sexual health clinics in the ACCESS network, the gonorrhoea incidence rate among HIV-positive gay and bisexual men (31.5 new infections per 100 person-years) was higher than among HIV-negative gay and bisexual men (23.9 per 100 person-years).
- Among female sex workers attending sexual health clinics in the ACCESS network, the incidence of gonorrhoea increased by 89%, from 4.7 per 100 person-years in 2013, to 8.9 per 100 person-years in 2022.

Other sexually transmissible infections

- Among non-Indigenous females aged under 21 years attending sexual health clinics for the first time, the proportion diagnosed with genital warts fell from 10.6% in 2007 to 0.2% in 2022.
- 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 from 8.8% in 2007 to 0.3% in 2022.
- Among Aboriginal and Torres Strait Islander females aged under 21 years, the proportion diagnosed with genital warts at first visit declined from 6.9% in 2007 to 0.9% in 2022.
- Among Aboriginal and Torres Strait Islander males aged under 21 years, the proportion diagnosed with genital warts at first declined from 3.9% in 2007 to 0.0% in 2022.
- Australia is on track to eliminate donovanosis, which was once a regularly diagnosed STI among remote Aboriginal communities. Since 2013 there has only been one case notified, in 2014.

2 Interpretation

In 2022, there were increases in new chlamydia, gonorrhoea, and infectious syphilis diagnoses despite decreases in testing compared to pre-pandemic levels. This highlights a need for greater testing coverage and for testing to be routinely offered to sexually active adolescents and young adults. Increased efforts to support partner notification and treatment of sexual partners are also needed to reduce the incidence of STIs.

Based on the interpretation of the ratio of diagnoses by sex, gonorrhoea, and infectious syphilis were diagnosed more frequently in the past five years among gay and bisexual men. Explanations for this trend among gay and bisexual men include more comprehensive screening 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 enhanced.

Gonorrhoea and infectious syphilis diagnoses continue to occur more frequently among young heterosexual Aboriginal and Torres Strait Islander people in remote areas. Simultaneously, gonorrhoea and infectious syphilis notification rates among women in urban settings are increasing at a considerable rate. Well promoted, accessible, and culturally acceptable testing services and prevention options must be made available to these populations.

The continued decline in the number of Medicare-rebated tests for chlamydia and gonorrhoea among both men and women between 2019 and 2022 is likely due to the impacts of the COVID-19 pandemic. This decline highlights the need for health promotion, enhanced testing, and partner notifications. In gay and bisexual men, the rise in chlamydia and gonorrhoea incidence in recent years highlights the need for a renewed focus on prevention strategies.

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

Sexually transmissible infections

3 Infectious Syphilis

See page 4 for summary.

3.1 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 – 2022

There were 6036 infectious syphilis notifications (infections of less than two years' duration) in Australia in 2022. In 2022, 4943 (82%) infectious syphilis notifications were among males, 3179 (53%) were among people aged 25 to 39 years, and 4666 (77%) were among people residing in major cities. Also in 2022, 971 (16%) notifications were among Aboriginal and Torres Strait Islander peoples, 4351 (72%) were among non-Indigenous people and 714 (12%) notifications did not have Aboriginal and Torres Strait Islander status reported (Table 1).

In 2022, around half (51%) of notifications of infectious syphilis among Aboriginal and Torres Strait Islander peoples were male compared with the majority (87%) among non-Indigenous people suggesting greater transmission attributed to male-to-male sex among non-Indigenous people. See [Bloodborne viral and sexually transmissible infections in Aboriginal and Torres Strait Islander people: annual surveillance report 2023](#) for further details ⁽¹⁾.

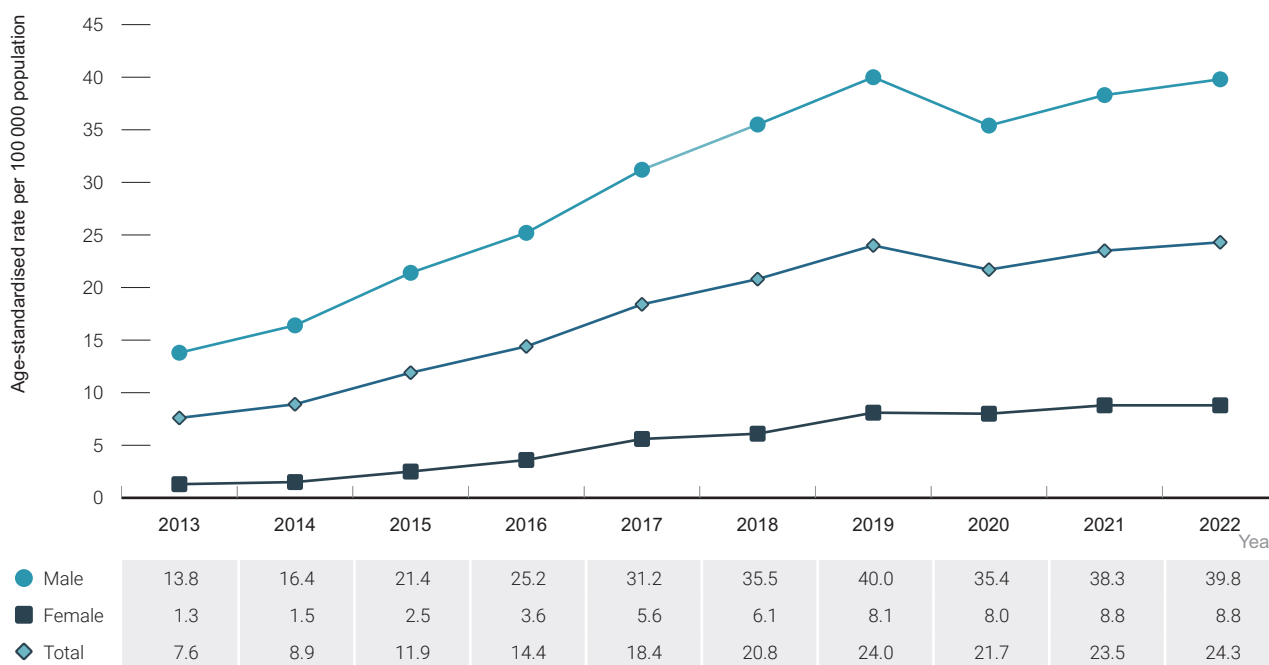
Table 1 Characteristics of syphilis notifications, 2013 – 2022

Characteristic	Year of diagnosis									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total cases	1719	2039	2777	3380	4402	5059	5900	5355	5754	6036
Gender										
Female	149	161	288	414	655	736	971	961	1040	1063
Male	1569	1877	2486	2957	3730	4306	4903	4372	4693	4943
Not reported	1	1	3	9	17	17	26	22	21	30
Age group										
0–14	8	11	17	17	24	9	33	18	15	12
15–19	74	99	146	176	243	224	299	288	266	211
20–24	195	245	407	428	568	678	705	617	615	626
25–29	221	303	461	616	813	930	1083	941	988	1060
30–34	268	299	433	538	731	825	1054	968	1149	1175
35–39	215	264	318	434	545	666	813	772	886	944
40+	738	818	995	1171	1478	1727	1913	1751	1835	2008
Remoteness										
Major cities	1247	1549	1847	2402	3201	3815	4478	4084	4406	4666
Regional	214	231	368	535	780	751	791	700	617	728
Remote	81	107	251	247	296	360	479	442	552	447
Not reported	177	152	311	196	125	133	152	129	179	195
Aboriginal and Torres Strait Islander status										
Aboriginal and/or Torres Strait Islander	161	252	464	550	799	809	1040	909	978	971
Non-Indigenous	1443	1668	2125	2584	3359	3986	4537	4144	4363	4351
Not reported	115	119	188	246	244	264	323	302	413	714
Congenital syphilis										
Aboriginal and/or Torres Strait Islander	4	3	2	1	5	4	1	8	9	8
Non-Indigenous	3	0	2	1	3	4	2	8	6	5
Not reported	0	0	0	0	0	0	1	1	0	2
State/Territory										
ACT	10	18	14	13	33	54	66	56	39	38
NSW	565	762	739	874	1107	1512	1932	1742	1825	1933
NT	23	72	206	231	322	350	342	270	214	214
QLD	334	395	573	684	1080	1127	1131	996	1057	1078
SA	42	29	121	86	161	202	162	133	250	287
TAS	21	14	15	6	12	9	8	9	9	31
VIC	638	656	946	1149	1363	1373	1688	1429	1517	1660
WA	86	93	163	337	324	432	571	720	843	795

Source: Australian National Notifiable Diseases Surveillance System.

Between 2013 and 2019, the infectious syphilis notification rate more than tripled from 7.6 to 24.0 per 100 000, followed by a decline between 2019 and 2020 to 21.7 per 100 000. The decline in the notification rate between 2019 and 2020 is likely due to a decrease in testing rates related to the 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. In 2022, the infectious syphilis notification rate was 24.3 per 100 000. Notification rates have remained higher among males than females for every year since 2013, and in 2022, rates were 39.8 and 8.8 per 100 000, respectively (Figure 1).

Figure 1 Infectious syphilis notification rate per 100 000 population by sex, 2013 – 2022



Source: Australian National Notifiable Diseases Surveillance System.



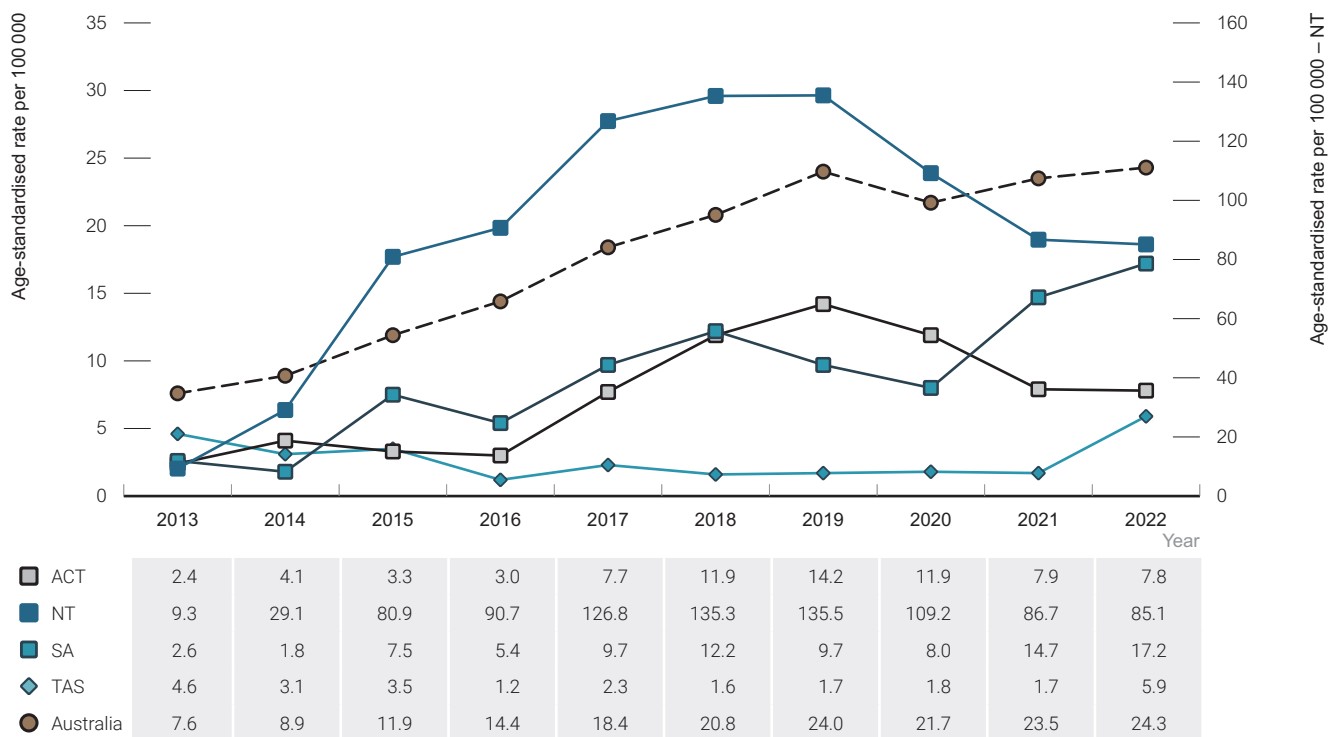
What does this mean?

Apart from over the peak of the COVID-19 pandemic, infectious diagnosis rates increased steadily between 2013 and 2022. Each year in this period, men were diagnosed with infectious syphilis more often than women, with variations by region and jurisdiction.

In 2022, infectious syphilis notification rates were highest among people aged 25 to 29 years (58.1 per 100 000), 30 to 39 years (55.7 per 100 000), and 20 to 24 years (38.2 per 100 000). Among males in 2022, the notification rates of infectious syphilis were highest in those aged 30 to 39 years (95.5 per 100 000), 25 to 29 years (89.7 per 100 000) and 20 to 24 years (50.9 per 100 000). For females, notification rates were highest among those aged 20 to 24 years (24.8 per 100 000), 25 to 29 years (24.6 per 100 000), and 15 to 19 years (15.8 per 100 000). Breakdowns of infectious syphilis notification rates by age and sex can be found on the [Kirby Institute data site](#).

By state and territory in 2022, infectious syphilis notification rates were highest in the Northern Territory (85.1 per 100 000) and Western Australia (30.3 per 100 000) (Figure 2).

Figure 2 Infectious syphilis notification rate per 100 000 population by state/territory, 2013 – 2022

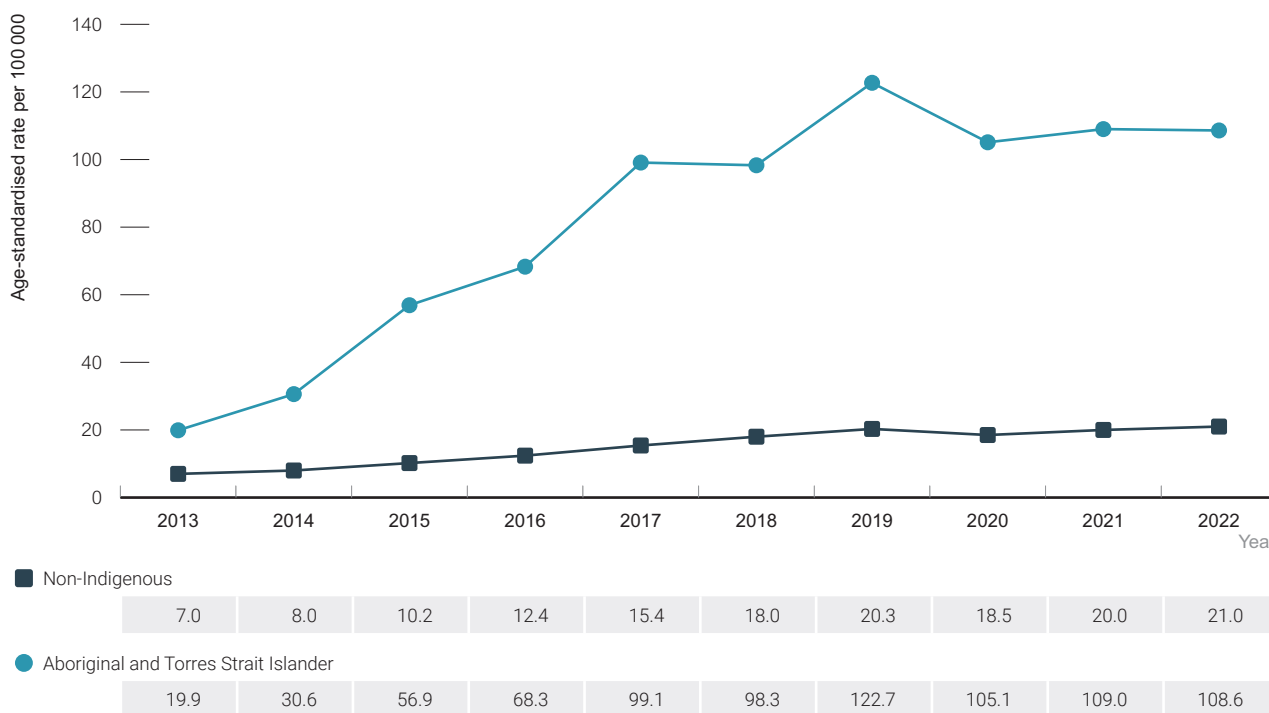


Source: Australian National Notifiable Diseases Surveillance System.

Between 2013 and 2019, the infectious syphilis notification rate among Aboriginal and Torres Strait Islander peoples increased more than four-fold from 19.9 to 122.7 per 100 000. Between 2019 and 2020, the notification rate declined to 105.1 per 100 000. Between 2020 and 2022 the rate remained stable and in 2022 was 108.6 per 100 000, more than five times as high as among non-Indigenous people at 21.0 per 100 000 (Figure 3).

In 2022, 16% of infectious syphilis notifications among Aboriginal and Torres Strait Islander peoples were among people aged 15 to 19 years, compared to 2% among non-Indigenous people. See *Bloodborne viral and sexually transmissible infections in Aboriginal and Torres Strait Islander people: annual surveillance report 2023* for further details ⁽¹⁾.

Figure 3 Infectious syphilis notification rate per 100 000 population by Aboriginal and Torres Strait Islander status, 2013 – 2022



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

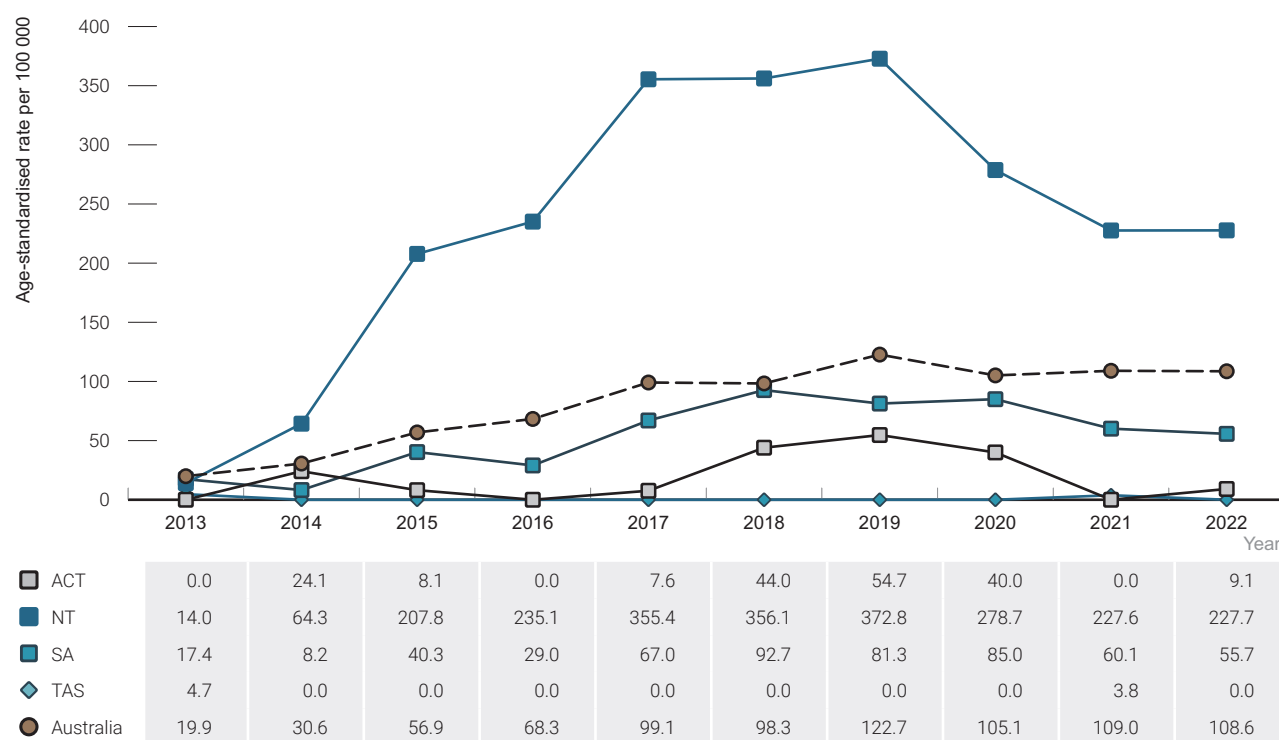
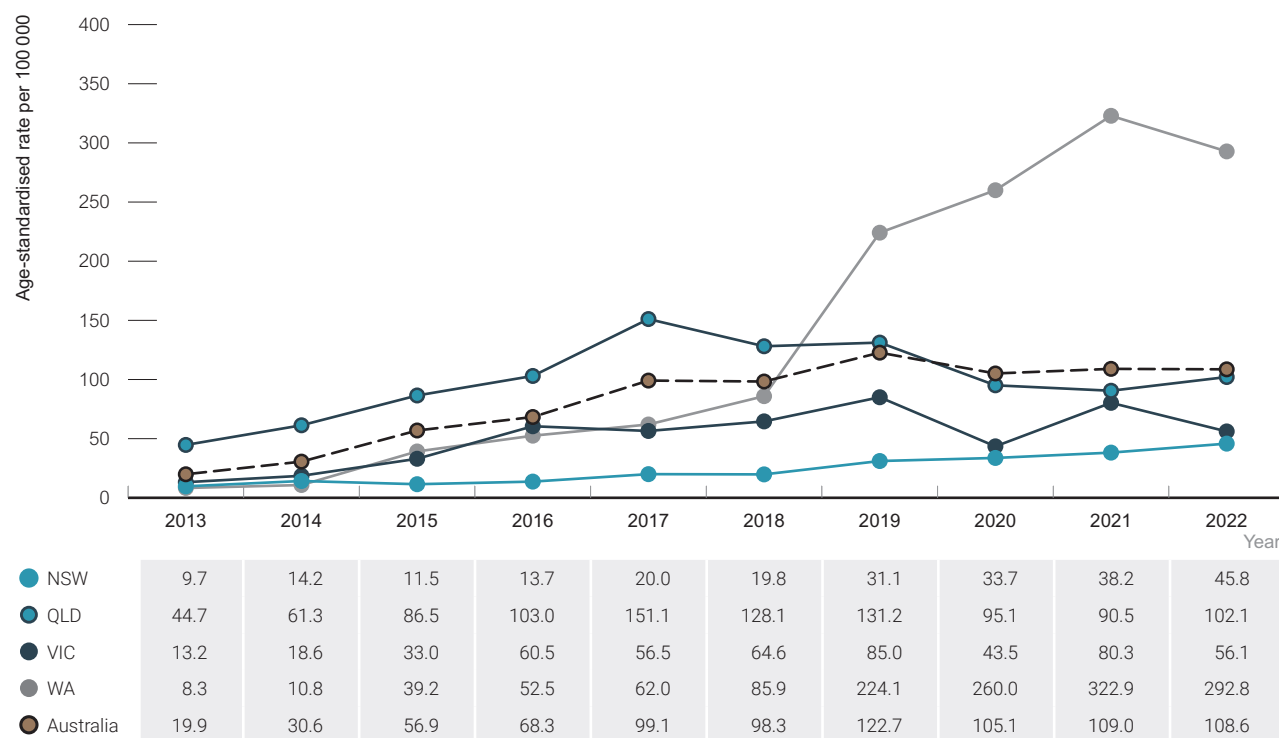


What does this mean?

Apart from over the COVID-19 pandemic, the infectious syphilis diagnosis rate among Aboriginal and Torres Strait Islander peoples increased sharply between 2013 and 2022.

In 2022, infectious syphilis notification rates among Aboriginal and Torres Strait Islander peoples were highest in Western Australia (292.8 per 100 000) and the Northern Territory (227.7 per 100 000) (Figure 4).

Figure 4 Infectious syphilis notification rate per 100 000 population among Aboriginal and Torres Strait Islander peoples by state/territory, 2013 – 2022



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

In 2022, infectious syphilis notification rates were higher in remote areas (114.1 per 100 000) when compared with major cities (24.8 per 100 000) and regional areas (13.3 per 100 000) (Figure 5). Among males in 2022, the notification rate was 43.6 per 100 000 in major cities, 17.1 per 100 000 in regional areas, and 104.0 per 100 000 in remote areas. (Figure 6). For comparison, among females in 2022, the notification rate was 6.0 per 100 000 in major cities, 9.5 per 100 000 in regional areas, and 124.7 per 100 000 in remote areas (Figure 5).

By remoteness classification among Aboriginal and Torres Strait Islander peoples, the infectious syphilis notification rate for people residing in remote areas (273.4 per 100 000) was higher compared to those living in major cities (85.1 per 100 000) and regional areas (65.6 per 100 000). By comparison, the highest notification rate for non-Indigenous people was in major cities (23.7 per 100 000). See *Bloodborne viral and sexually transmissible infections in Aboriginal and Torres Strait Islander people: annual surveillance report 2023* for further details ⁽¹⁾.

Figure 5 Infectious syphilis notification rate per 100 000 population by region of residence, 2013 – 2022



Source: Australian National Notifiable Diseases Surveillance System.



What does this mean?

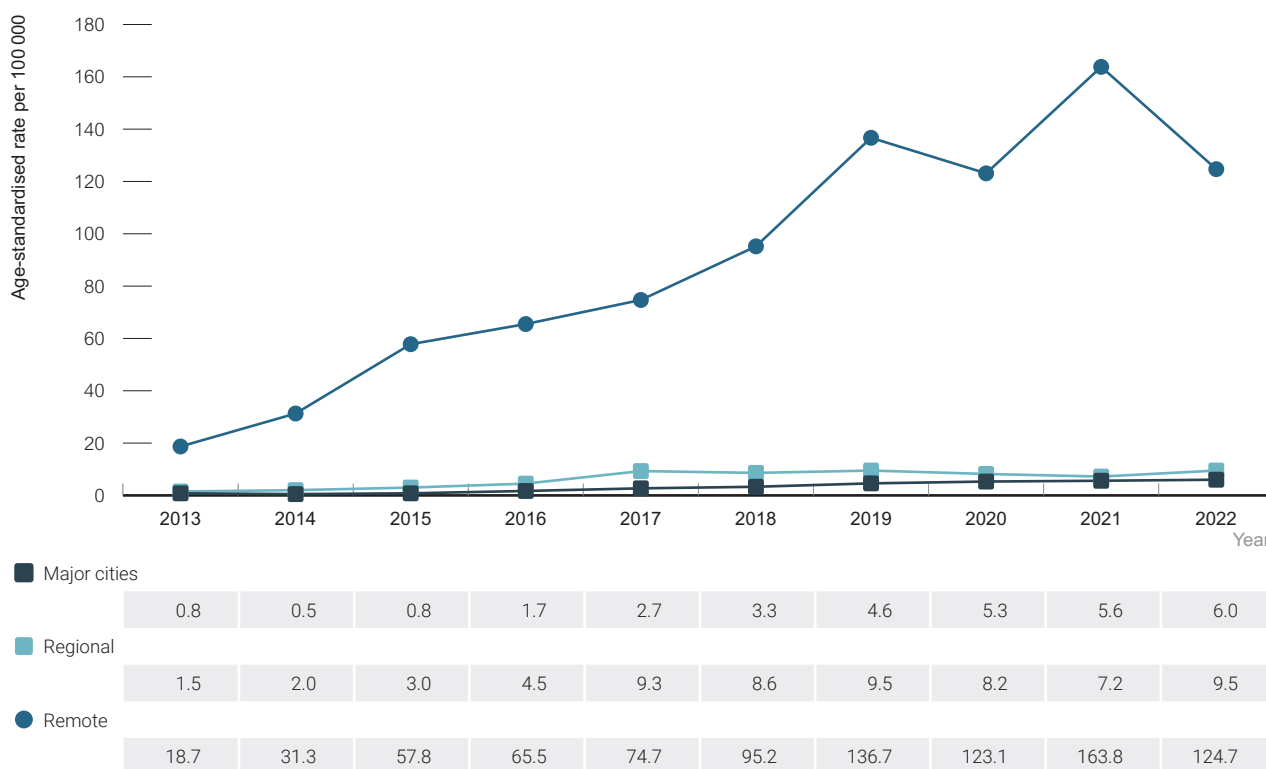
Infectious syphilis diagnoses increased in remote and regional areas as well as major cities between 2013 and 2022. Per person, infectious syphilis was diagnosed more often in remote areas than in regional areas or major cities.

Figure 6 Infectious syphilis notifications per 100 000 males by region of residence, 2013 – 2022



Source: Australian National Notifiable Diseases Surveillance System.

Figure 7 Infectious syphilis notifications per 100 000 females by region of residence, 2013 – 2022



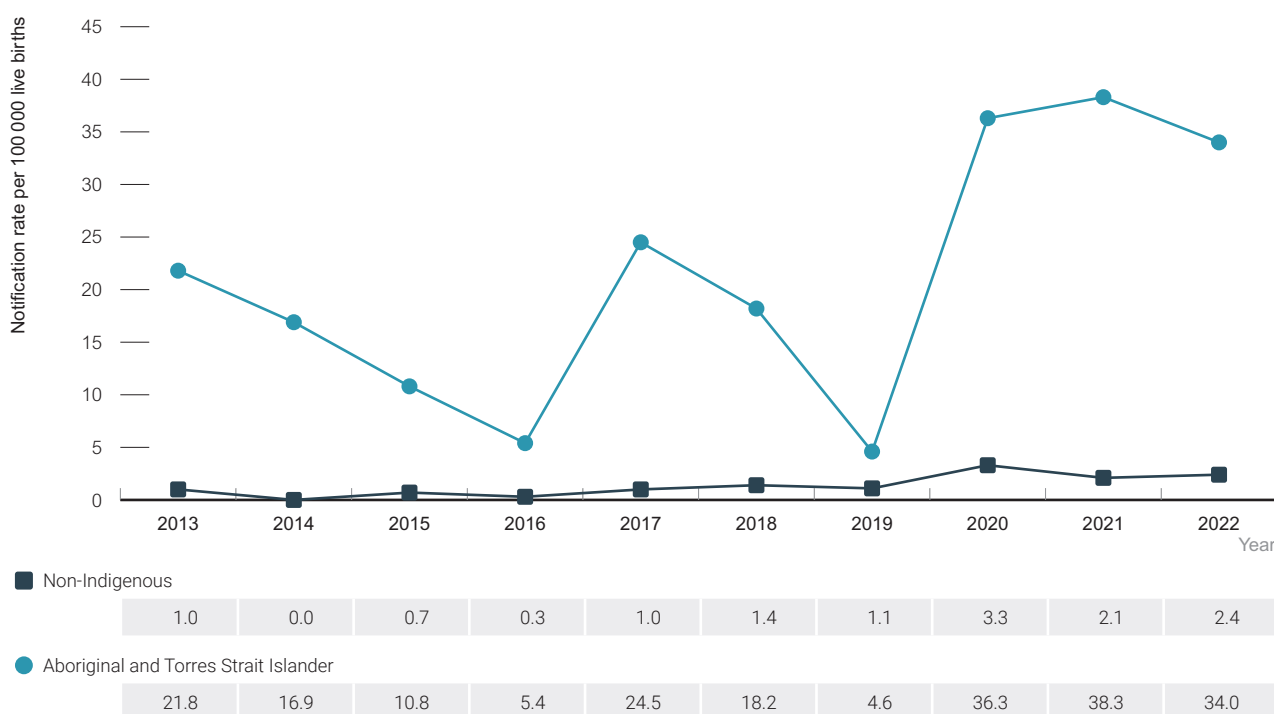
Source: Australian National Notifiable Diseases Surveillance System.

3.2 Congenital syphilis

Between 2013 and 2022 there were 83 cases of congenital syphilis notified in Australia. Of those, 45 (54%) were among Aboriginal and Torres Strait Islander peoples. Of the 15 congenital syphilis cases notified in 2022, eight were among Aboriginal and Torres Strait Islander peoples and seven were among non-Indigenous people (Figure 8). The congenital syphilis notification rate among Aboriginal and Torres Strait Islander peoples was 34.0 per 100 000 live births in 2022. In 2022, the congenital syphilis notification rate among Aboriginal and Torres Strait Islander peoples was more than 14 times as high as among non-Indigenous people (2.4 per 100 000) (Figure 8).

Of the 69 congenital syphilis cases notified between 2016 and 2022, 18 cases resulted in the death of the infant (including stillbirth). Of these, 11 deaths occurred among Aboriginal and Torres Strait Islander peoples, five occurred among non-Indigenous people, and three cases occurred among infants for whom Aboriginal and Torres Strait Islander status was not reported. (Figure 9). See *Bloodborne viral and sexually transmissible infections in Aboriginal and Torres Strait Islander people: annual surveillance report 2023* for further details ⁽¹⁾.

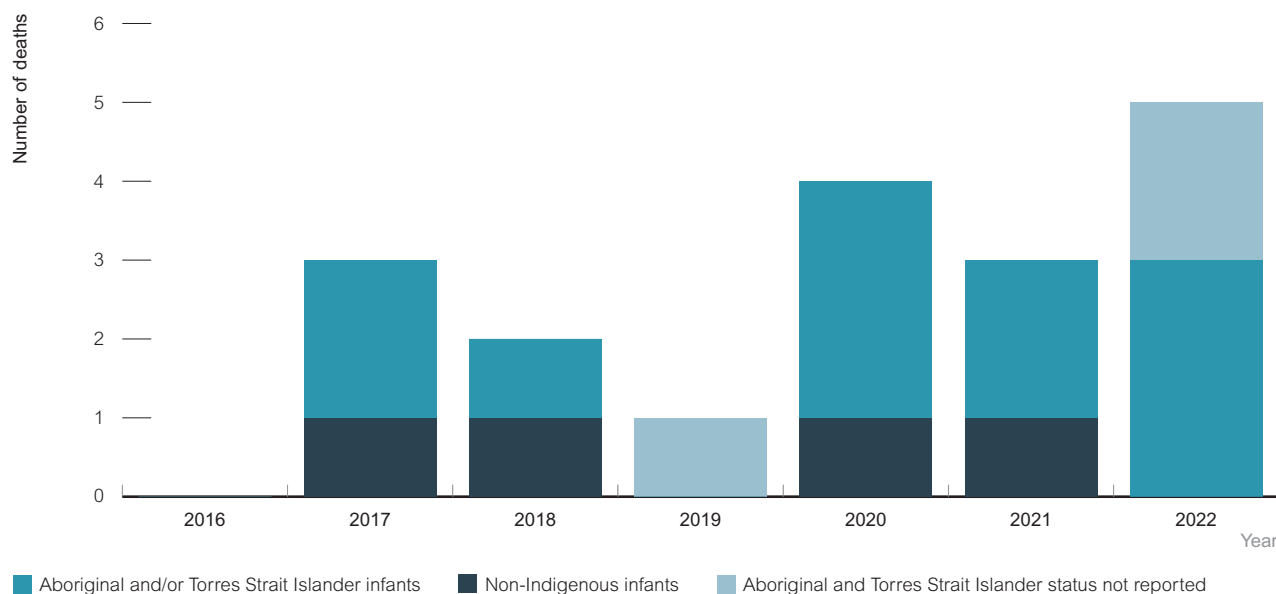
Figure 8 Congenital syphilis rate per 100 000 live births by Aboriginal and Torres Strait Islander status^a, 2013 – 2022



a Non-Indigenous includes notifications where Aboriginal and Torres Strait Islander status was not reported.

Source: Australian National Notifiable Diseases Surveillance System.

Figure 9 Number of deaths attributed to congenital syphilis by Aboriginal and Torres Strait Islander status, 2016 – 2022



Source: Australian Department of Health and Aged Care⁽²⁾.

3.3 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⁽³⁾. For other sexually active people aged 15 to 29 years, annual opportunistic syphilis testing is recommended, with more frequent testing recommended in areas of high prevalence⁽³⁾. Repeat syphilis testing is also recommended as part of routine antenatal screening, at the first antenatal visit, early in the third trimester (28–32 weeks), and at the time of birth. Guidelines may vary by local area, particularly in areas with a declared outbreak.

The number of syphilis tests per year among gay and bisexual men can give an indication of adherence to recommendations in the clinical guidelines⁽³⁾. The average number of syphilis tests per year among gay and bisexual men attending sexual health clinics and high-caseload general practice clinics in ACCESS (Australian Collaboration for Coordinated Enhanced Sentinel Surveillance) fluctuated between 2013 and 2022 and was 1.5 tests per year in 2022. Among HIV-positive gay and bisexual men, the average number of syphilis tests declined from 1.9 tests per year in 2013 to 1.6 tests per year in 2022. Among HIV-negative gay and bisexual men in the same period, the average number of syphilis tests fluctuated and was 1.5 tests per year in 2022.

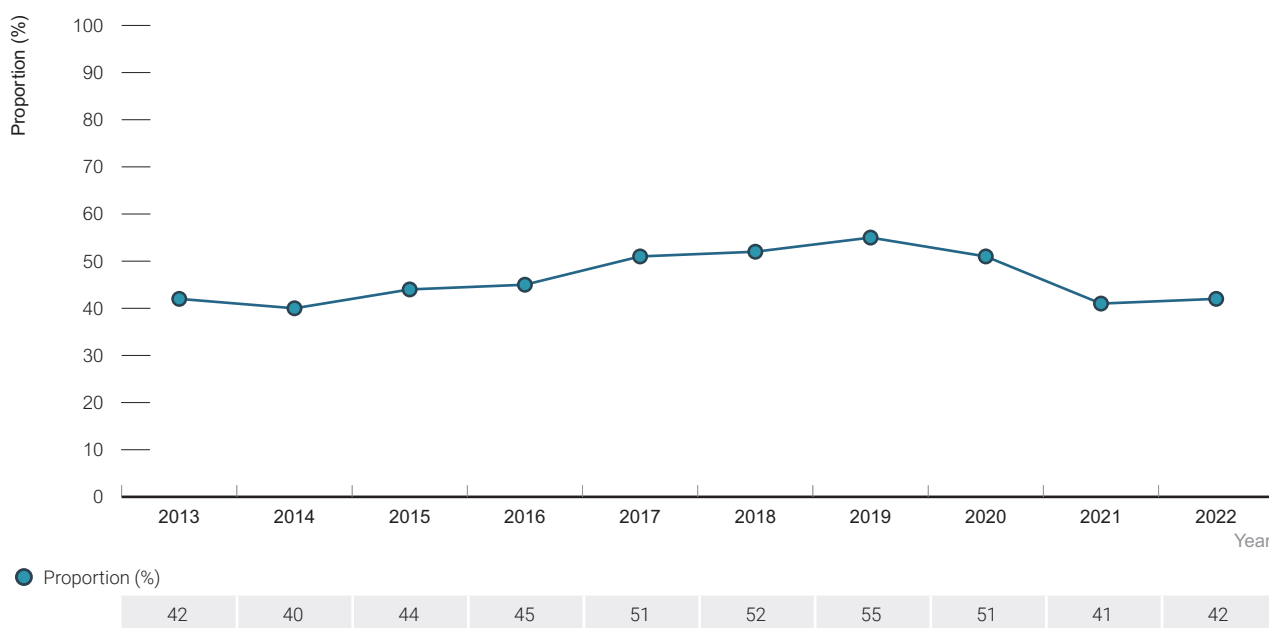
Figure 10 Average number of syphilis tests per year among gay and bisexual men by HIV status, 2013 – 2022



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

In 2022, the Gay Community Periodic Surveys reported that 42% of participating gay and bisexual men completed comprehensive STI testing (at least four samples collected) in the 12 months prior to the survey. This proportion fluctuated over the reporting period and was 42% in 2013 (Figure 11). For more information, see [Annual reports of trends in behaviour](#) ⁽⁴⁾.

Figure 11 Gay and bisexual men reporting comprehensive STI testing in the 12 months prior to the survey, 2013 – 2022



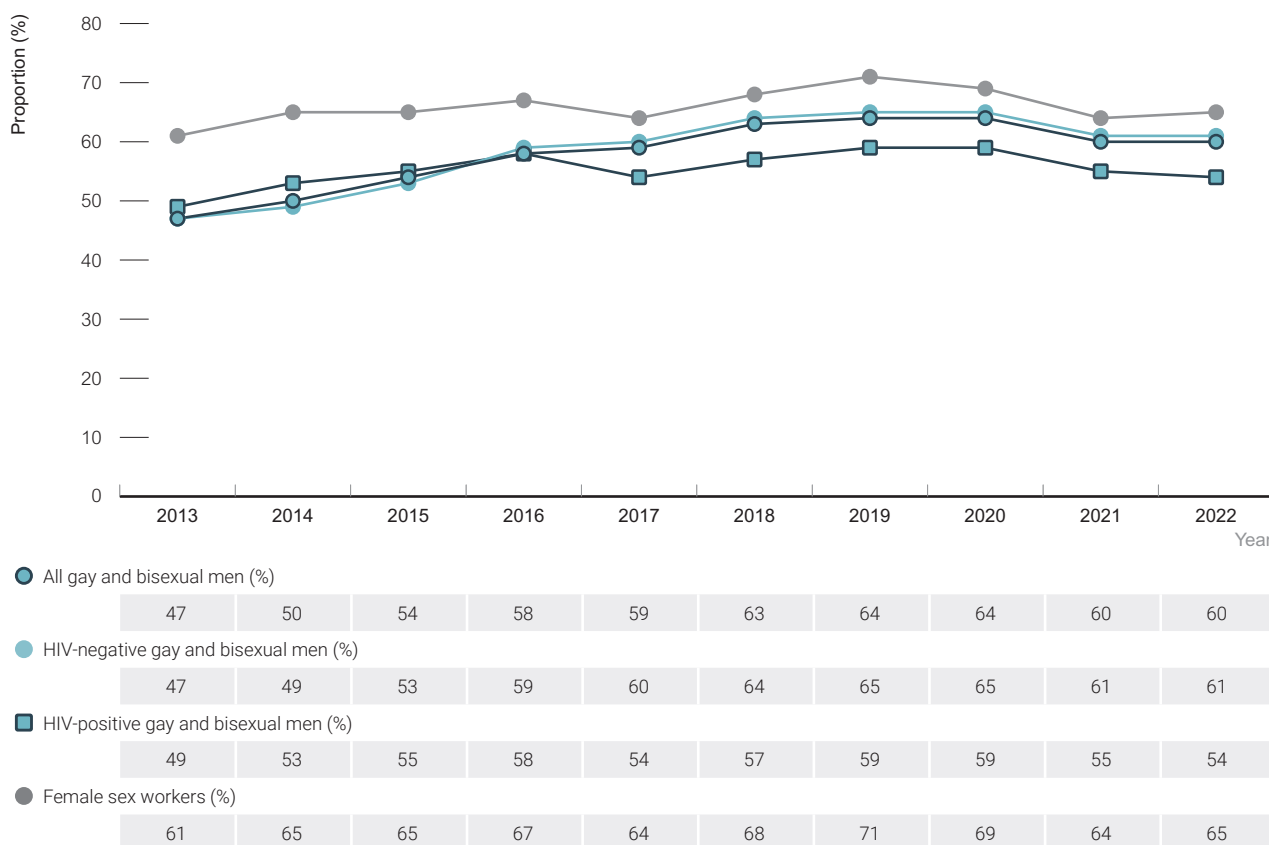
Note: Comprehensive testing is defined as the collection of samples of at least four of the following: anal swab, throat swab, penile swab, urine, blood, among men tested for STI in the previous 12 months.

Source: Gay Community Periodic Surveys.

Repeat comprehensive testing

In 2022, among gay and bisexual men attending sexual health clinics in ACCESS, 60% 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, an increase from 47% in 2013, but a decline from 64% in 2019 (Figure 12). Trends over time in the proportion with repeat comprehensive screening was similar between HIV-positive and HIV-negative gay and bisexual men between 2013 and 2022. Among female sex workers attending sexual health clinics in ACCESS, the proportion who had a repeat comprehensive STI screen increased from 61% in 2013 to 71% in 2019, and then declined to 65% in 2022 (Figure 12).

Figure 12 Repeat comprehensive STI screen within 13 months of a test among gay and bisexual men by HIV-status and female sex workers, 2013 – 2022



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).

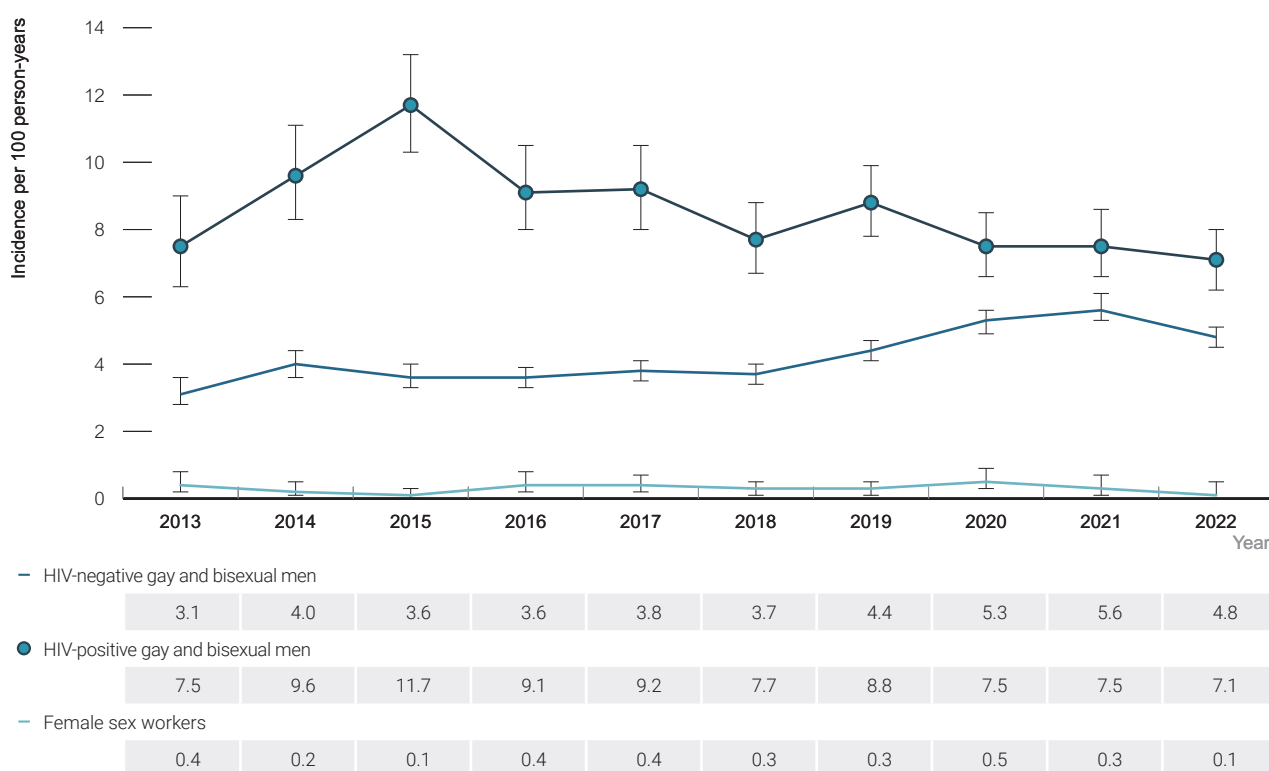
3.4 Infectious syphilis incidence

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 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) ⁽⁵⁾. These incidence estimates represent people attending sexual health clinics and may not be generalisable to broader priority populations.

In 2022, the incidence of infectious syphilis among HIV-positive gay and bisexual men attending sexual health clinics was 7.1 new infections per 100 person-years, compared with 4.8 per 100 person-years among HIV-negative gay and bisexual men. Between 2013 and 2022, infectious syphilis incidence increased among HIV-negative gay and bisexual men by 55% (from 3.1 per 100 person-years). By comparison, infectious syphilis incidence among HIV-positive gay and bisexual men fluctuated in the same period between 11.7 and 7.1 new infections per 100 person-years, and was 7.1 new infections per 100 person-years in 2022 (Figure 13). Caution should be taken with interpreting between-year trends as confidence intervals overlap, indicating that between-year differences are not statistically significant.

In 2022, the infectious syphilis incidence rate among female sex workers was 0.1 per 100 person-years, down from 0.4 per 100 person-years in 2013 (Figure 13). Small numbers of female sex workers included in incidence calculations mean that this trend should be interpreted with caution.

Figure 13 Infectious syphilis incidence in sexual health clinic attendees by select population, 2013 – 2022



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

4 Chlamydia

See page 5 for summary.

4.1 Chlamydia notifications

Chlamydia (*Chlamydia trachomatis infection*) remains the most frequently notified STI in Australia with 93 777 notifications reported in 2022. Of these, equal proportions were diagnosed among females and males (46 465, 50% and 46 973, 50% respectively), and two-thirds (64 404, 69%) were among people aged 15 to 29 years. Just under three quarters (67 763, 72%) were among people residing in major cities (Table 2). Of all chlamydia notifications reported in 2022, 7683 (8%) were among Aboriginal and Torres Strait Islander peoples, 39 886 (43%) were among non-Indigenous people, and 46 208 (49%) were among people for whom Aboriginal and Torres Strait Islander status was not reported (Table 2). See [Bloodborne viral and sexually transmissible infections in Aboriginal and Torres Strait Islander people: annual surveillance report 2023](#) for further details ⁽¹⁾.

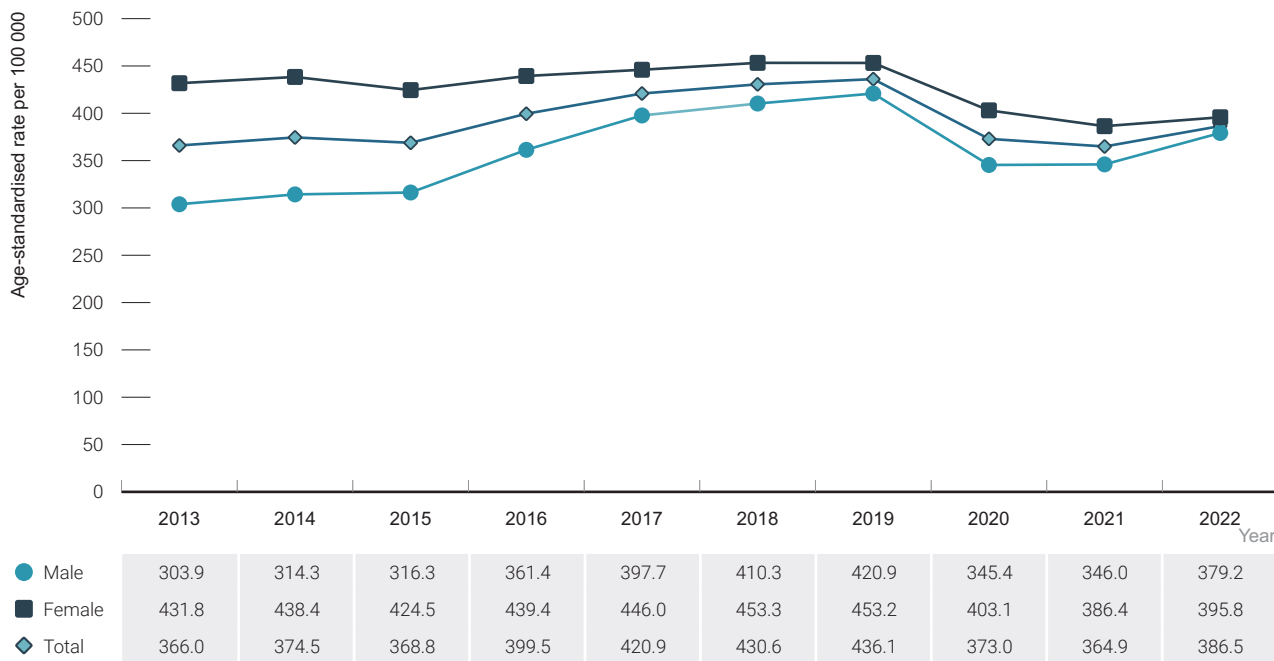
Table 2 Characteristics of chlamydia notifications, 2013 – 2022

Characteristic	Year of diagnosis									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total cases	83 819	86 799	86 397	94 725	101 216	104 763	107 238	91 327	87 258	93 777
Gender										
Female	48 332	49 714	48 722	51 083	52 531	53 926	54 393	48 005	44 712	46 465
Male	35 454	37 032	37 621	43 405	48 431	50 620	52 498	43 084	42 326	46 973
Not reported	33	53	54	237	254	217	347	238	220	339
Age group										
0–14	733	687	510	536	475	467	460	370	339	323
15–19	19 967	19 189	17 497	17 640	17 694	17 395	16 704	14 768	14 834	15 327
20–24	30 494	31 681	30 694	32 565	34 138	34 712	34 796	30 243	28 087	29 832
25–29	15 982	17 135	17 787	20 125	21 899	22 795	23 346	19 921	18 227	19 245
30–34	7 072	7 829	8 717	10 179	11 435	12 238	13 071	10 986	10 876	11 760
35–39	3 676	3 823	4 246	5 209	5 866	6 766	7 547	6 330	6 225	7 017
40+	5 883	6 449	6 929	8 453	9 687	10 378	11 304	8 696	8 661	10 263
Not reported	12	6	17	18	22	12	10	13	9	10
Remoteness										
Major cities	56 325	59 086	59 894	66 891	73 283	76 105	77 579	66 680	63 133	67 763
Regional	21 418	21 786	20 824	21 567	21 492	22 066	22 227	19 670	19 556	20 639
Remote	4 279	4 192	3 994	3 968	3 880	4 105	3 999	3 480	3 616	3 858
Not reported	1 797	1 735	1 685	2 299	2 561	2 487	3 433	1 497	953	1 517
Aboriginal and Torres Strait Islander status										
Aboriginal and/or Torres Strait Islander	7 758	7 613	7 546	7 784	7 983	8 407	8 483	7 796	7 570	7 683
Non-Indigenous	33 455	34 440	34 457	37 832	41 221	43 706	48 012	41 832	40 014	39 886
Not reported	42 606	44 746	44 394	49 109	52 012	52 650	50 743	41 699	39 674	46 208
State/Territory										
ACT	1 270	1 197	1 266	1 362	1 465	1 579	1 650	1 447	1 340	1 457
NSW	20 807	22 897	22 549	25 977	28 948	31 062	32 607	27 084	25 100	25 752
NT	3 004	2 997	2 737	2 630	2 667	2 780	3 054	2 645	2 632	2 547
QLD	20 326	21 139	21 185	22 914	23 942	23 811	24 292	22 523	22 903	23 271
SA	5 531	5 495	5 384	5 487	5 915	6 267	6 430	5 645	5 507	5 588
TAS	1 538	1 776	1 665	1 688	1 584	1 563	1 533	1 291	1 452	1 622
VIC	19 601	19 956	20 441	22 856	25 198	26 180	26 113	19 909	17 386	22 575
WA	11 742	11 342	11 170	11 811	11 497	11 521	11 559	10 783	10 938	10 965

Source: Australian National Notifiable Diseases Surveillance System.

The chlamydia notification rate remained relatively stable between 2013 and 2015, gradually increased between 2015 and 2019, and then declined between 2019 and 2021, increasing slightly again in 2022. In 2022 the chlamydia notification rate was 386.5 notifications per 100 000 population. Similar trends were seen among both males and females (Figure 14). The chlamydia notification rate was higher among females than males every year from 2013 to 2021 and was 379.2 per 100 000 females and 395.8 per 100 000 males in 2022. The decline in the notification rate between 2019 and 2021 was likely due to a decrease in testing rates related to the COVID-19 pandemic and may not be reflective of the trend in new chlamydia infections.

Figure 14 Chlamydia notification rate per 100 000 population by sex, 2013 – 2022



Source: Australian National Notifiable Diseases Surveillance System.



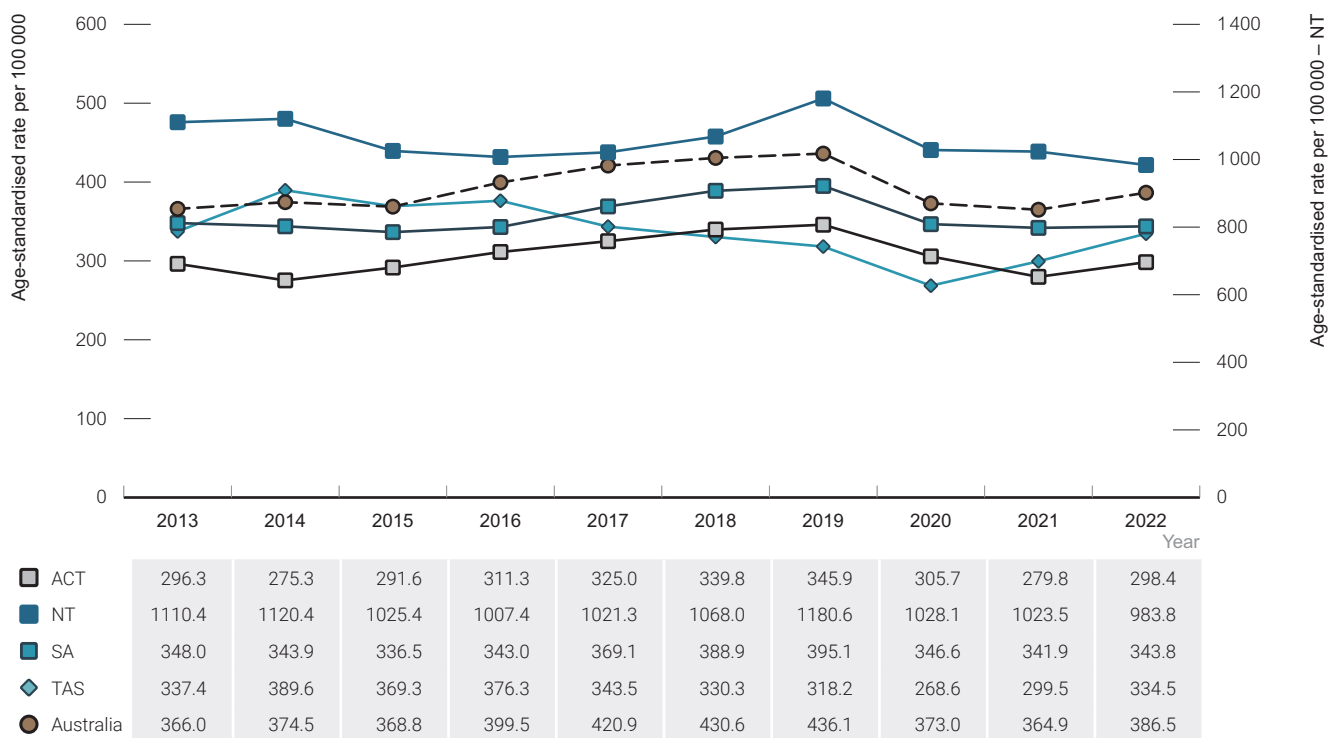
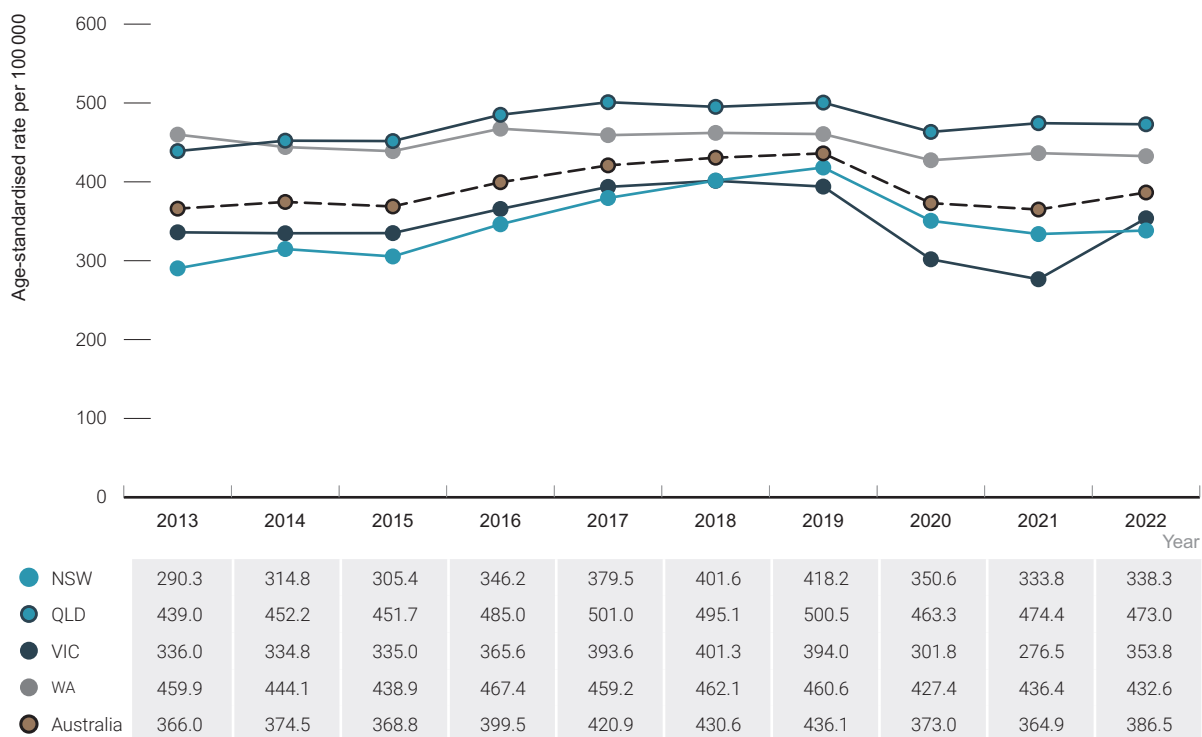
What does this mean?

The rate of new chlamydia diagnoses remained stable between 2013 and 2022 apart from a decline between 2019 and 2021, likely related to the COVID-19 pandemic.

The trends in chlamydia notification rates varied by age group. Notification rates among those aged 20 to 24 years, 25 to 29 years, 30 to 39 years and those aged over 40 years or older, gradually increased between 2013 and 2019, declined over the peak of the COVID-19 pandemic (2020 – 2021) and increased in 2022. In 2022, age groups with the highest notification rates included 20 to 24 years (1822.5 per 100 000), 25 to 29 years (1054.7 per 100 000), and 15 to 19 years (999.5 per 100 000). Similar patterns were seen among males and females. Breakdowns of chlamydia notification rates by age and sex can be found on the [Kirby Institute data site](#).

By state and territory, the chlamydia notification rate was highest in the Northern Territory every year from 2013 to 2022. However, the notification rate in the Northern Territory in 2022 was the lowest since prior to 2013 (983.8 per 100 000 in 2022). The chlamydia notification rate fluctuated during this period in every state and territory (Figure 15).

Figure 15 Chlamydia notification rate per 100 000 population by state/territory, 2013 – 2022

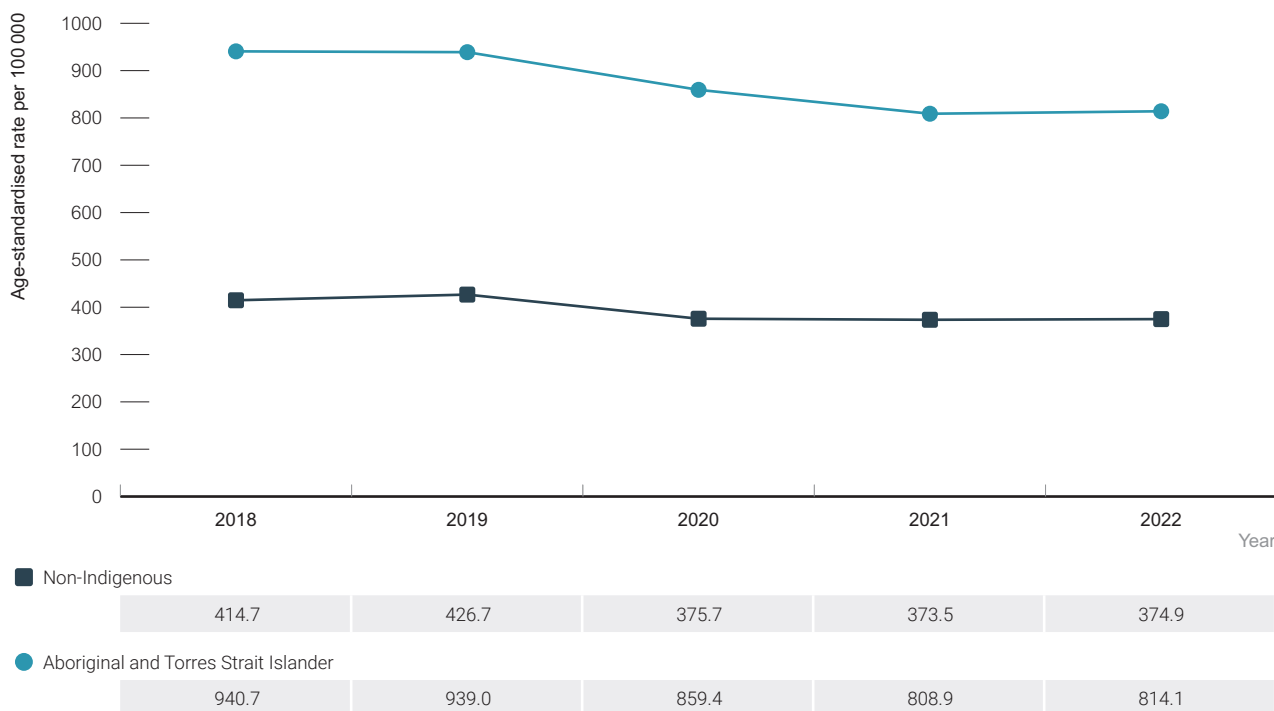


Source: Australian National Notifiable Diseases Surveillance System.

The chlamydia notification rate among Aboriginal and Torres Strait Islander peoples is based on data from six jurisdictions (the Australian Capital Territory, New South Wales, the Northern Territory, Queensland, South Australia, and Western Australia), where Aboriginal and Torres Strait Islander status was $\geq 50\%$ complete each of the past five years (2018 – 2022).

The chlamydia notification rate among Aboriginal and Torres Strait Islander peoples declined between 2018 and 2022 from 940.7 to 814.1 per 100 000. In 2022, the chlamydia notification rate among Aboriginal and Torres Strait Islander peoples was more than twice as high as among non-Indigenous people (814.1 vs 374.9 per 100 000) (Figure 16).

Figure 16 Chlamydia notification rate per 100 000 by Aboriginal and Torres Strait Islander status, 2018 – 2022



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, New South Wales, Northern Territory, South Australia, Queensland, and Western Australia).

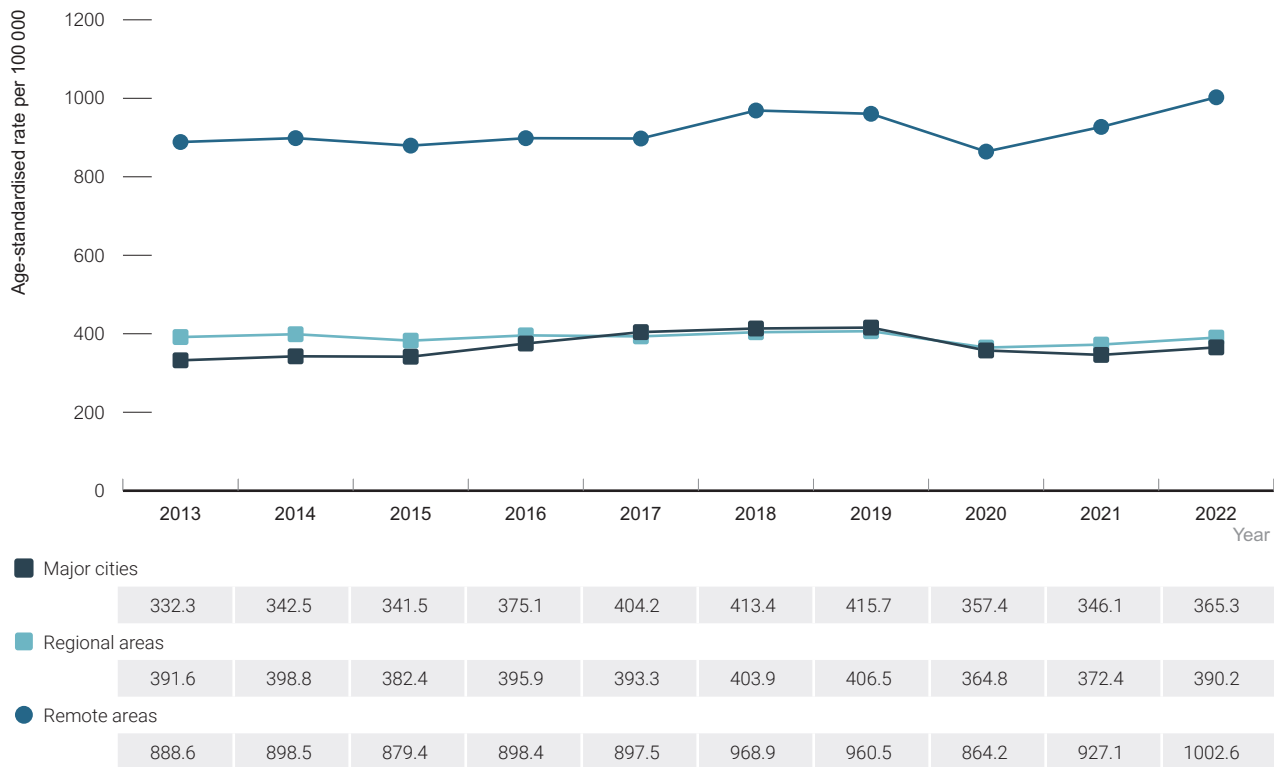


What does this mean?

Between 2018 and 2022, the chlamydia diagnosis rate among Aboriginal and Torres Strait Islander peoples was at least twice as high as among non-Indigenous people.

The chlamydia notification rate was highest in remote areas for each of the 10 years from 2013 to 2022 (Figure 17). In 2022, the chlamydia notification rate was 1002.6 per 100 000 in remote areas, 390.2 in regional areas, and 365.3 in major cities. This pattern occurred among both males and females. For a full breakdown of notification rates by remoteness classification, please see the [Kirby Institute data site](#).

Figure 17 Chlamydia notification rate per 100 000 population by region of residence, 2013 – 2022



Source: Australian National Notifiable Diseases Surveillance System.

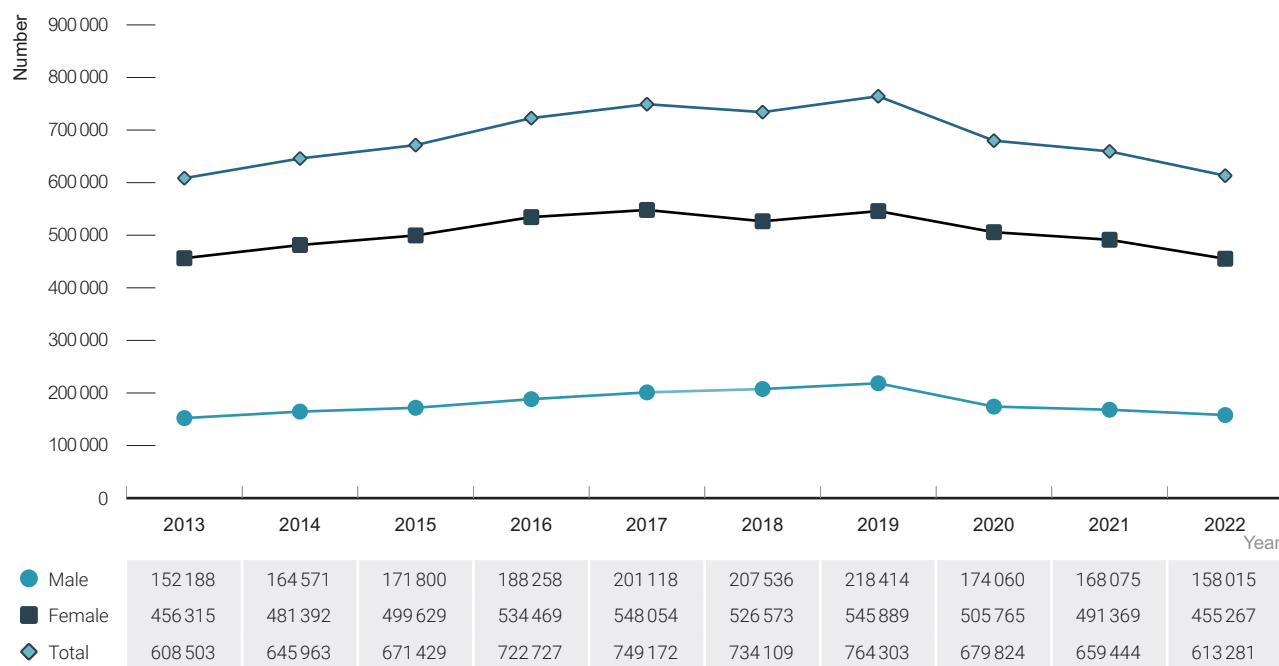
4.2 Chlamydia testing

Clinical guidelines recommend the opportunistic offer of chlamydia screening to all young people (15 to 29 years of age) at least annually, including offering self-collected samples when appropriate, and regular testing for sex workers. 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) ⁽³⁾. 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 2013 and 2019, the number of Medicare-rebated chlamydia tests among those aged 15 to 29 years increased by 33%, from 608 503 in 2013, to 764 303 in 2019, with increases among both men (20% increase) and women (44% increase) (Figure 18). Between 2019 and 2022, the number of tests declined by 20%, with a greater decline in the number of tests seen among males (28%) than females (17%). The decline in the number of chlamydia tests was likely related to the challenges accessing healthcare because of the COVID-19 pandemic. Declines in testing were also likely influenced the decline in notification rates seen between 2019 and 2022. 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.

Figure 18 Number of Medicare-rebated chlamydia tests among people aged 15 to 24 years by sex, 2013 – 2022



Source: Medicare.

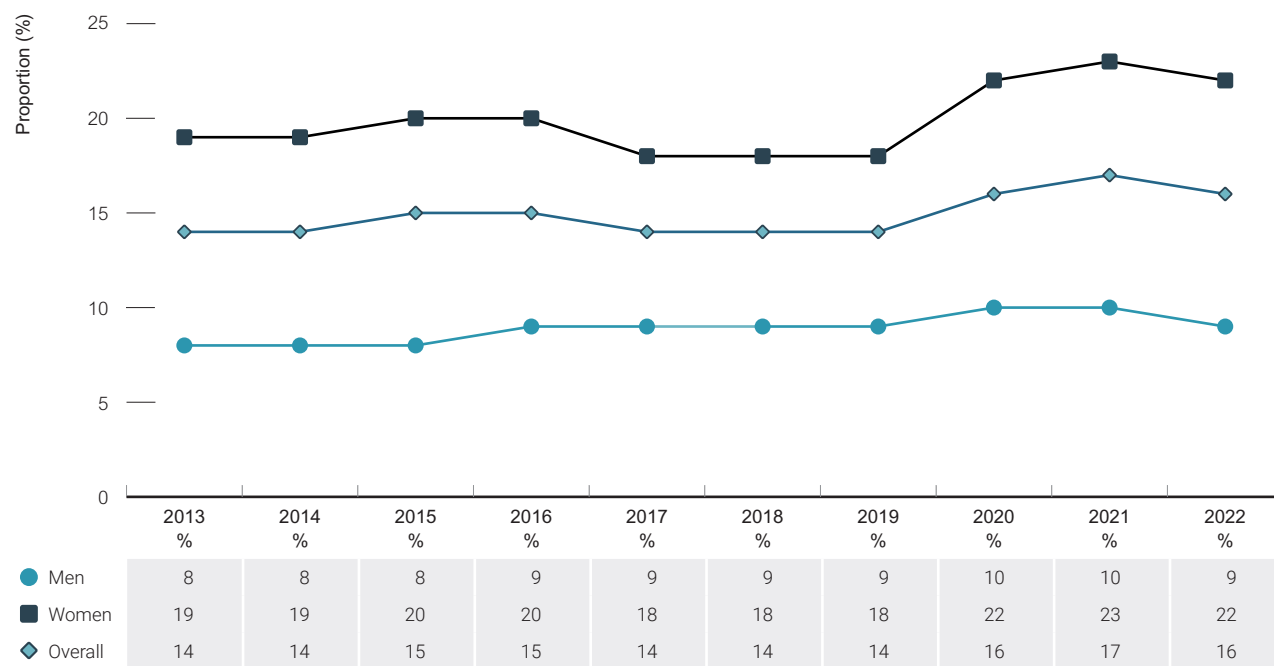


What does this mean?

Every year between 2013 and 2022, women obtained more than twice the number of Medicare-rebated chlamydia tests than men.

In 2022, 16% of people aged 15–29 years attending general practice had a Medicare-rebated chlamydia test in the previous 12 months (22% of women and 9% of men), with proportions steady since the start of the COVID-19 pandemic but higher than the years preceding it (Figure 19). Despite the higher proportion of people getting tested for chlamydia at their general practice, the lower number of tests conducted in 2022 overall suggests that the number of people seeking health care at their general practice declined in 2022. Across all populations, the number of face-to-face Medicare-rebated General Practice appointments declined by 22% between 2019 and 2022 ⁽⁶⁾.

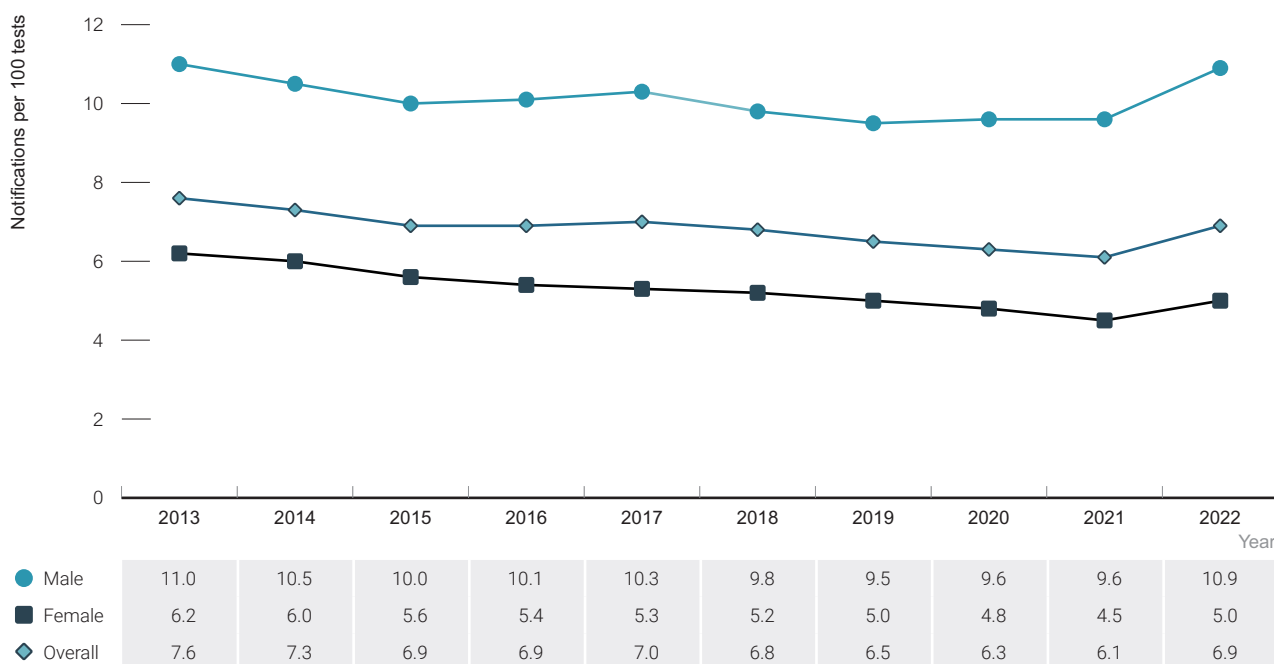
Figure 19 Proportion of general practice attendees aged 15–29 years who had a Medicare-rebated chlamydia test in a year, by sex, 2013 – 2022



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 2022, the number of chlamydia notifications per 100 Medicare-rebated chlamydia tests was 6.9, an increase after a decline over the peak of the COVID-19 pandemic (6.1 in 2021). By sex, the number of chlamydia notifications per 100 Medicare-rebated chlamydia tests was 10.9 for males and 5.0 for females (Figure 20). Males had a higher number of notifications per 100 tests than females each year from 2013 to 2022. Given the decline in the number of people accessing health care from 2020, these numbers should be interpreted with caution. Further breakdowns by age and sex are available on the [Kirby Institute data site](#).

Figure 20 Number of chlamydia notifications per 100 Medicare-rebated chlamydia tests by sex, 2013 – 2022



Source: Medicare; Australian National Notifiable Diseases Surveillance System.



What does this mean?

For every year between 2013 and 2022, on average, men were diagnosed more than twice as often as women for each chlamydia test undertaken.

4.3 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 ACCESS^(7,8) and is calculated by dividing the number of incident infections (negative test followed by a positive test) by the person's time at risk (determined by the time between repeat chlamydia tests)⁽⁵⁾. These incidence estimates represent populations attending sexual health clinics and may not be generalisable to the broader priority populations.

In 2022, chlamydia incidence among HIV-positive gay and bisexual men was 40.9 new infections per 100 person-years, which was higher than among HIV-negative gay and bisexual men (29.2 per 100 person-years). There was a 20% increase in chlamydia incidence among HIV-positive gay and bisexual men since 2013 (from 34.1 per 100 person-years) and a 65% increase in HIV-negative gay and bisexual men since 2013 (from 17.6 per 100 person-years) (Figure 21). Among female sex workers, chlamydia incidence increased by 38% between 2013 and 2022 (from 7.4 to 10.1 per 100 person-years) (Figure 21).

Caution should be taken with interpretation as some confidence intervals overlap, indicating that these between-year differences are not statistically significant. Same year differences in incidence estimates between reports are likely due to variations in ACCESS clinics included in the analysis, depending on data availability.

Figure 21 Chlamydia incidence in sexual health clinic attendees by select population, 2013 – 2022



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

4.4 Chlamydia diagnosis and care cascade

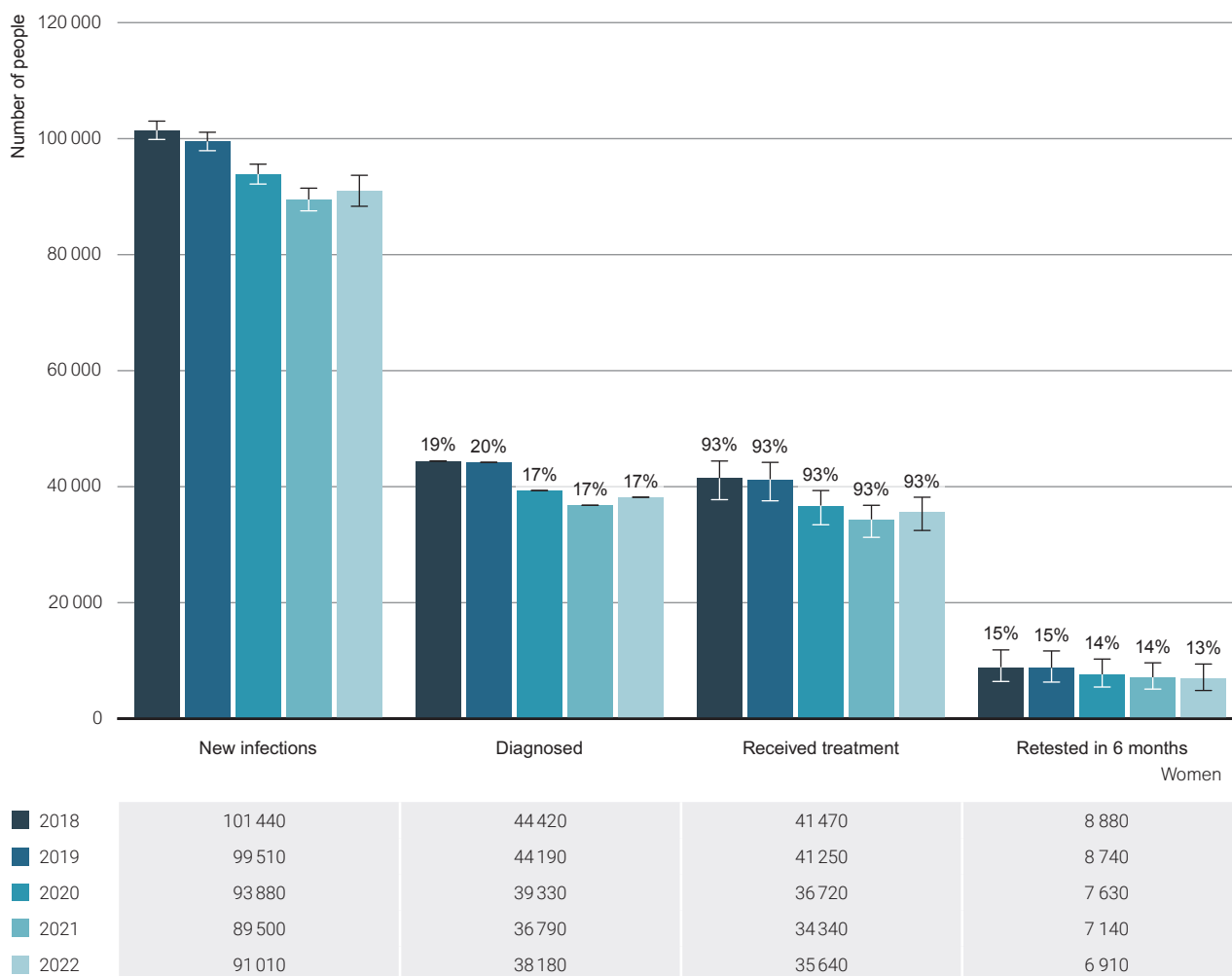
This report includes the chlamydia diagnosis and care ‘cascade’ for women aged 15–29 years, which estimates the number and proportion of women with new chlamydia infections in Australia, and the number and proportion who were notified, received treatment and had a retest at three months post-treatment, as recommended in clinical guidelines⁽³⁾.

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 women in each stage of the cascade in Australia were estimated. 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 [Acknowledgements](#)). The cascade focuses on women aged 15–29 years, as guidelines recommend annual testing in this group and most chlamydia diagnoses occur in this age group.

In 2022, there were an estimated 91 010 new chlamydia infections in women aged 15–29 years, including reinfections, down from 101 440 infections in 2018. Of new infections in 2022, an estimated 38 180 (42%) were diagnosed, 35 640 (93%) received treatment, and 6 910 (19%) had a retest between six weeks and six months after diagnosis (Figure 22). The greatest gaps in the cascade were therefore at the diagnosis and retesting steps. Similar trends in the gaps were observed between 2018 and 2022.

Figure 22 The chlamydia diagnosis and care cascade among women aged 15–29 years, 2010 – 2022



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

5 Gonorrhoea

See page 6 for summary.

5.1 Gonorrhoea notifications

There were 32 877 gonorrhoea (*Neisseria gonorrhoeae*) notifications in Australia in 2022, a 119% increase from 15 010 notifications in 2013, but a decrease of 5% from 34 745 notifications in 2019. In 2022, 71% of notifications were among males (23 206 of notifications), and 76% were among people residing in major cities (25 141 notifications) (Table 3).

Of the 32 877 notifications in 2022, 4994 (15%) were among Aboriginal and Torres Strait Islander peoples, 18 661 (57%) were among non-Indigenous peoples, and there were a further 9222 (28%) notifications for whom Aboriginal and Torres Strait Islander status was not reported (Table 3).

The ratio of male to female notifications among Aboriginal and Torres Strait Islander peoples in 2022 was 0.9:1 compared with 3.0:1 among non-Indigenous people suggesting greater transmission attributed to male-to-male sex among non-Indigenous people. In 2022, almost a quarter (22%) of gonorrhoea notifications among Aboriginal and Torres Strait Islander peoples were among people aged 15 to 19 years, compared to 6% 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 2023* for further details ⁽¹⁾.

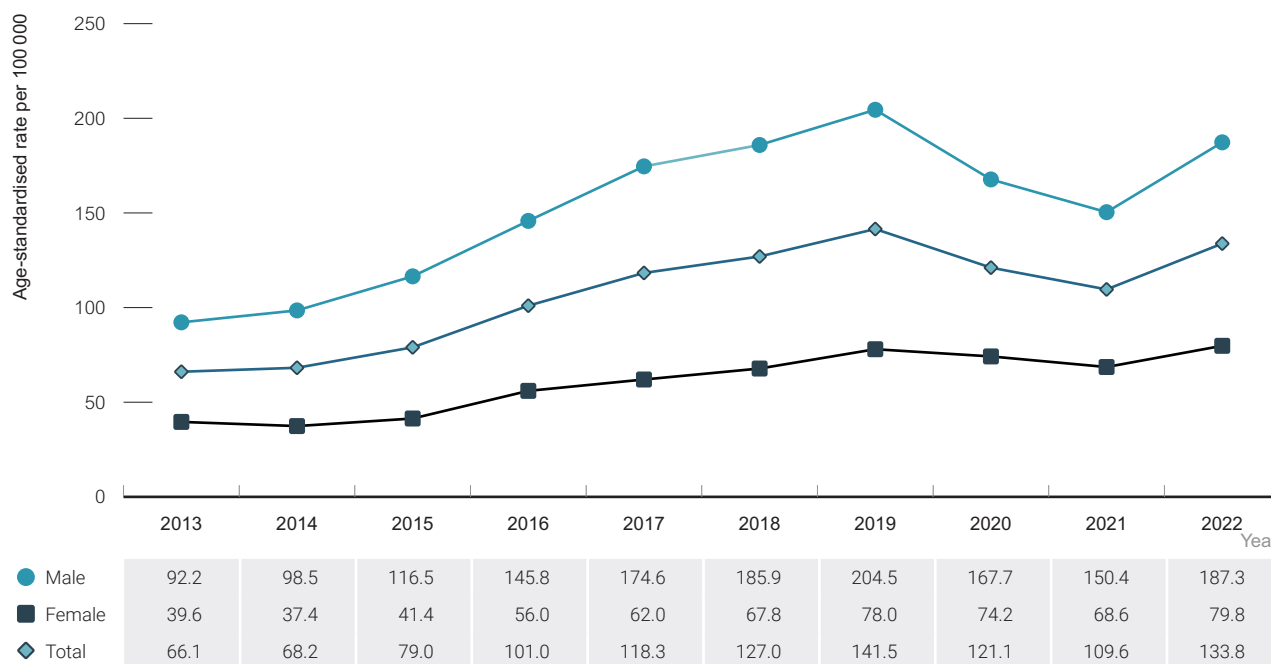
Table 3 Characteristics of gonorrhoea notifications, 2013 – 2022

Characteristic	Year of diagnosis									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total cases	15 010	15 673	18 461	23 852	28 355	30 838	34 745	29 799	26 594	32 877
Gender										
Female	4 398	4 200	4 741	6 490	7 288	8 091	9 419	8 926	8 095	9 518
Male	10 586	11 430	13 691	17 305	20 999	22 628	25 203	20 766	18 410	23 206
Not reported	26	43	29	57	68	119	123	107	89	153
Age group										
0–14	231	252	219	254	202	200	201	171	166	141
15–19	2 253	2 047	2 010	2 385	2 585	2 425	2 525	2 364	2 171	2 708
20–24	3 447	3 673	4 113	4 969	5 958	5 940	6 375	5 346	4 640	6 200
25–29	3 005	3 259	4 055	5 323	6 397	6 876	7 877	6 597	5 722	6 820
30–34	2 071	2 195	2 804	3 868	4 741	5 458	6 345	5 571	4 963	5 846
35–39	1 258	1 348	1 743	2 407	3 019	3 604	4 301	3 854	3 401	4 293
40+	2 740	2 889	3 462	4 597	5 453	6 333	7 119	5 883	5 529	6 859
Not reported	5	10	55	49	0	2	2	13	2	10
Remoteness										
Major cities	9 168	10 459	13 002	17 822	21 057	22 869	26 363	22 875	20 023	25 141
Regional	2 235	2 191	2 222	2 668	3 167	3 457	3 907	3 779	3 481	4 019
Remote	2 838	2 400	2 517	2 570	2 531	2 857	2 232	2 317	2 582	2 874
Not reported	769	623	720	792	1 600	1 655	2 243	828	508	843
Aboriginal and Torres Strait Islander status										
Aboriginal and/or Torres Strait Islander	4 255	3 607	3 641	3 862	4 233	4 760	4 170	4 427	4 690	4 994
Non-Indigenous	7 153	7 974	9 689	13 154	17 137	18 997	21 493	17 528	15 346	18 661
Not reported	3 602	4 092	5 131	6 836	6 985	7 081	9 082	7 844	6 558	9 222
State/Territory										
ACT	114	120	141	201	250	329	334	284	330	367
NSW	4 181	4 839	5 403	6 978	9 197	10 531	11 675	9 832	7 590	10 172
NT	1 955	1 742	1 829	1 769	1 755	2 130	1 346	1 344	1 672	2 035
QLD	2 727	2 724	3 032	4 033	5 078	4 908	5 980	6 356	5 401	5 839
SA	807	736	794	1 110	1 272	1 289	2 093	1 661	1 441	1 774
TAS	69	65	57	83	117	149	158	150	185	255
VIC	3 185	3 253	4 897	6 317	7 342	8 085	9 234	6 594	7 058	9 180
WA	1 972	2 194	2 308	3 361	3 344	3 417	3 925	3 578	2 917	3 255

Source: Australian National Notifiable Diseases Surveillance System.

Between 2013 and 2019 there was a 114% increase in the gonorrhoea notification rate (from 66.1 to 141.5 per 100 000), followed by a 23% decline from 2019 to 2021 (to 109.4 per 100 000). Between 2021 and 2022 the gonorrhoea notification rate increased by 22% to 133.8 per 100 000 (Figure 23). The decline in the notification rate between 2019 and 2021 is likely in part due to a decrease in testing rates related to the 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 2013 and was 187.3 per 100 000 among males and 79.8 per 100 000 among females in 2022.

Figure 23 Gonorrhoea notification rate per 100 000 population by sex, 2013 – 2022



Source: Australian National Notifiable Diseases Surveillance System.



What does this mean?

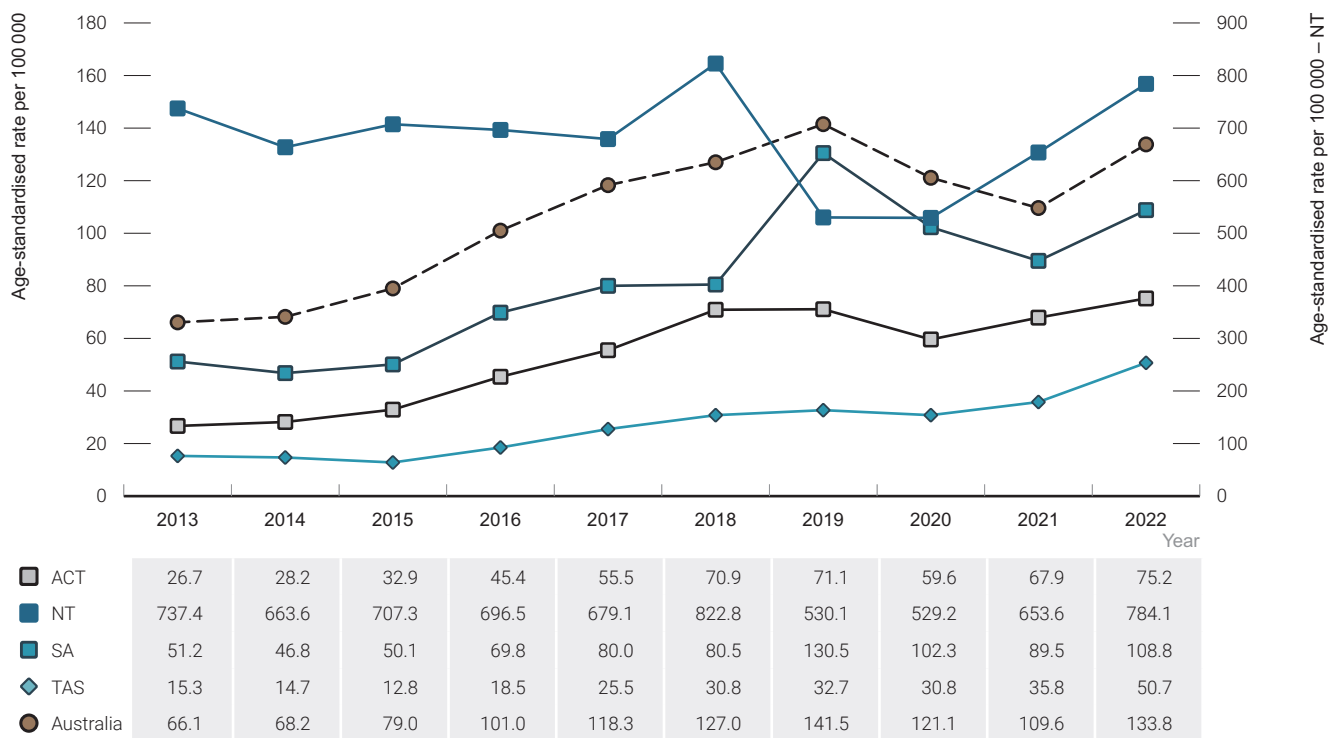
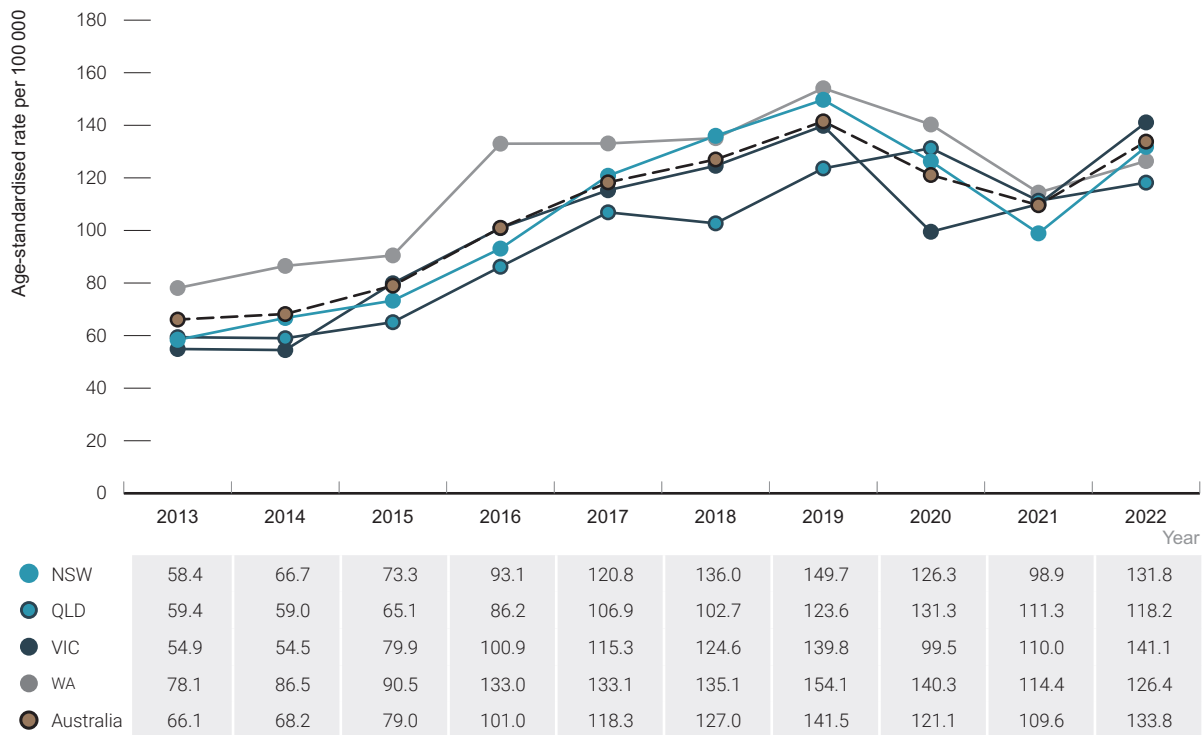
Apart from over the peak of the COVID-19 pandemic, gonorrhoea diagnosis rates increased steadily between 2013 and 2022. Each year in this period, men were diagnosed with gonorrhoea more often than women.

Between 2013 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 (179% increase). In 2022, the highest notification rates were among those aged 20 to 24 years (378.8 per 100 000), 25 to 29 years (373.8 per 100 000), and 30 to 39 years (266.3 per 100 000). Similar trends were seen among males and females.

Among males in 2022, the highest notification rates were among those aged 25 to 29 years (527.9 per 100 000), 30 to 39 years (424.5 per 100 000), and 20 to 24 years (414.6 per 100 000). Among females in 2022, the highest notification rates were among those aged 20 to 24 years (337.2 per 100 000), 25 to 29 years (210.9 per 100 000), and 15 to 19 years (212.7 per 100 000). For full notifications data by age, please see the [Kirby Institute data site](#).

By state and territory, the gonorrhoea notification rate was highest every year from 2013 to 2022 in the Northern Territory and was 784.1 per 100 000 in 2022. Between 2013 and 2019, gonorrhoea notification rates increased in every state and territory apart from the Northern Territory. Between 2019 and 2021 notification rates declined in New South Wales, Queensland, South Australia, Victoria, and Western Australia and then increased in every state and territory between 2021 and 2022 (Figure 24).

Figure 24 Gonorrhoea notification rate per 100 000 population by state/territory, 2013 – 2022



Source: Australian National Notifiable Diseases Surveillance System.

The gonorrhoea notification rate among Aboriginal and Torres Strait Islander peoples is based on data from seven jurisdictions (the Australian Capital Territory, New South Wales, the Northern Territory, Queensland, South Australia, Tasmania, and Western Australia), where Aboriginal and Torres Strait Islander status was $\geq 50\%$ complete each of the past five years (2018 – 2022).

Between 2018 and 2022, the gonorrhoea notification rate among Aboriginal and Torres Strait Islander peoples fluctuated between 466.2 and 549.1 per 100 000. In 2022, the notification rate among Aboriginal and Torres Strait Islander peoples was 547.1 per 100 000. The notification rate among non-Indigenous people fluctuated between 86.6 and 124.3 per 100 000 and was 108.3 per 100 000 in 2022. In 2022 the notification rate among Aboriginal and Torres Strait Islander peoples was five times as high as among non-Indigenous people (Figure 25).

Figure 25 Gonorrhoea notification rate per 100 000 population by Aboriginal and Torres Strait Islander status, 2018 – 2022



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, New South Wales, Northern Territory, South Australia, Queensland, Tasmania, and Western Australia).

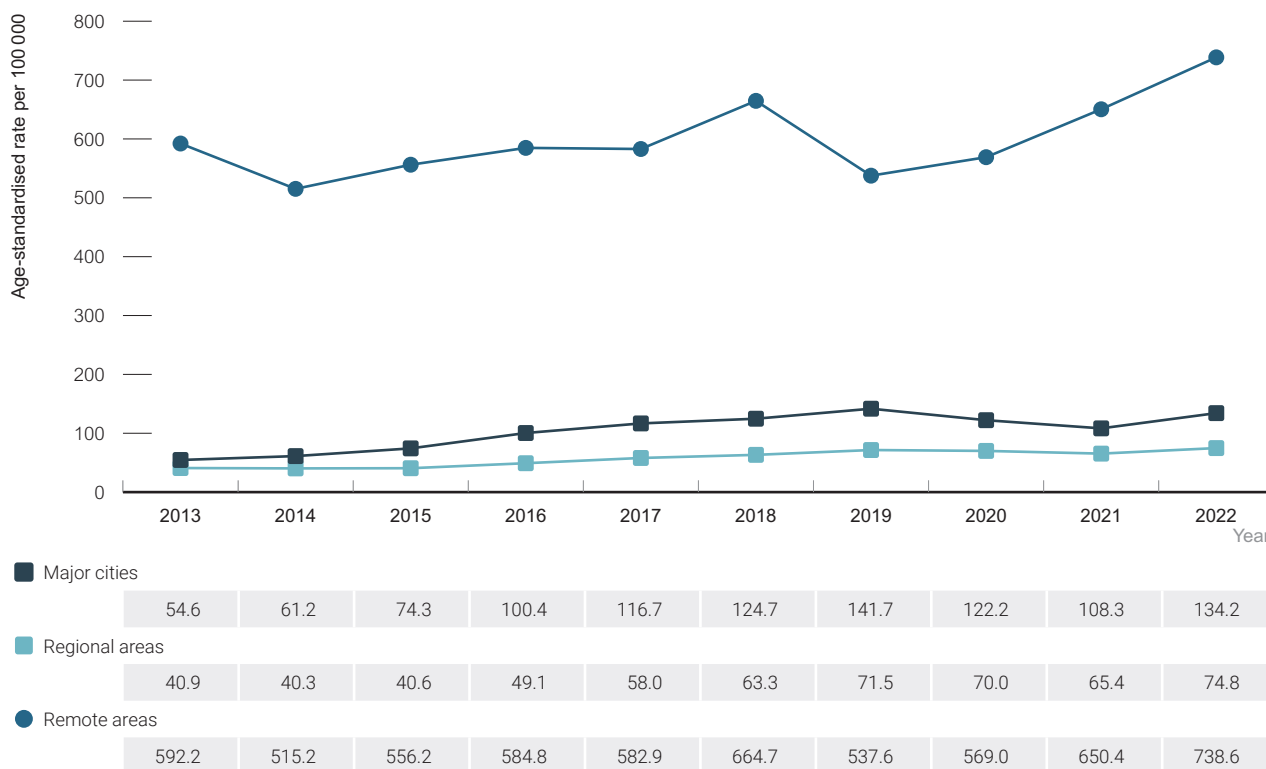


What does this mean?

Between 2018 and 2022, the gonorrhoea diagnosis rate among Aboriginal and Torres Strait Islander peoples was around five times as high as among non-Indigenous people.

Between 2013 and 2019, gonorrhoea notification rates increased in major cities (160% increase) and regional areas (75% increase). Over the same period, the notification rate remained stable in remote areas (Figure 26). The notification rate declined in major cities and regional areas between 2019 and 2021. In 2022, gonorrhoea notification rates were highest in remote areas (738.6 per 100 000), followed by major cities (134.2 per 100 000) and regional areas (74.8 per 100 000) (Figure 26). Similar trends were seen in both males and females. For breakdowns of gonorrhoea notification rates by sex and remoteness classifications, please see the [Kirby Institute data site](#).

Figure 26 Gonorrhoea notification rate per 100 000 population by region of residence, 2013 – 2022



Source: Australian National Notifiable Diseases Surveillance System.

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What does this mean?

Per person, gonorrhoea is diagnosed more often in remote areas than in regional areas or major cities.

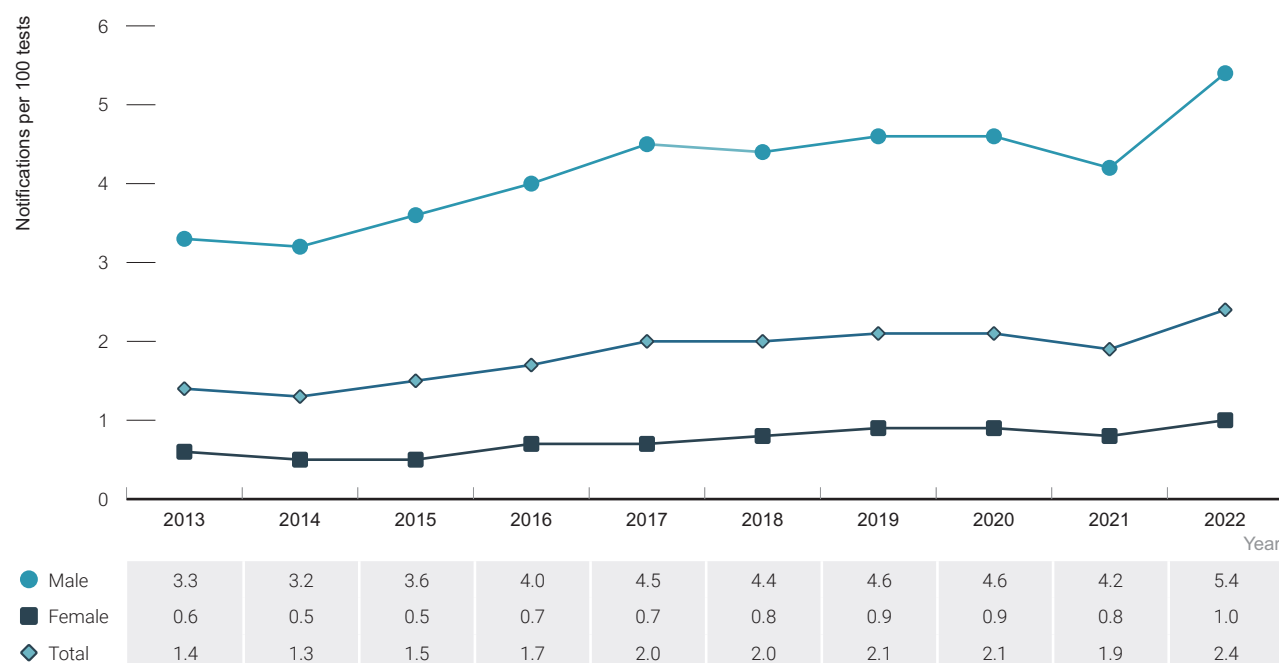
5.2 Gonorrhoea testing

Clinical guidelines recommend the opportunistic offer of gonorrhoea screening to all young people (15 to 29 years of age) at least annually, including offering self-collected samples when appropriate, and regular testing for sex workers. 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 PrEP. ⁽¹⁰⁾ 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

Between 2013 and 2019, the number of gonorrhoea notifications per 100 Medicare-rebated gonorrhoea tests increased by 55% from 1.4 in 2012 to 2.1 in 2019, with an increase in both females (54%) and males (39%) (Figure 27). Between 2019 and 2022, this number increased further from 2.1 to 2.4. The number of gonorrhoea notifications per 100 Medicare-rebated has been higher in males than females in each of the years since 2013 (5.4 vs 1.0 in 2022). These data suggest that the increases observed in notifications between 2013 and 2022 cannot be fully explained by more testing (See Gonorrhoea notifications, pp 31).

Figure 27 Number of gonorrhoea notifications per 100 Medicare-rebated gonorrhoea tests by sex, 2013 – 2022



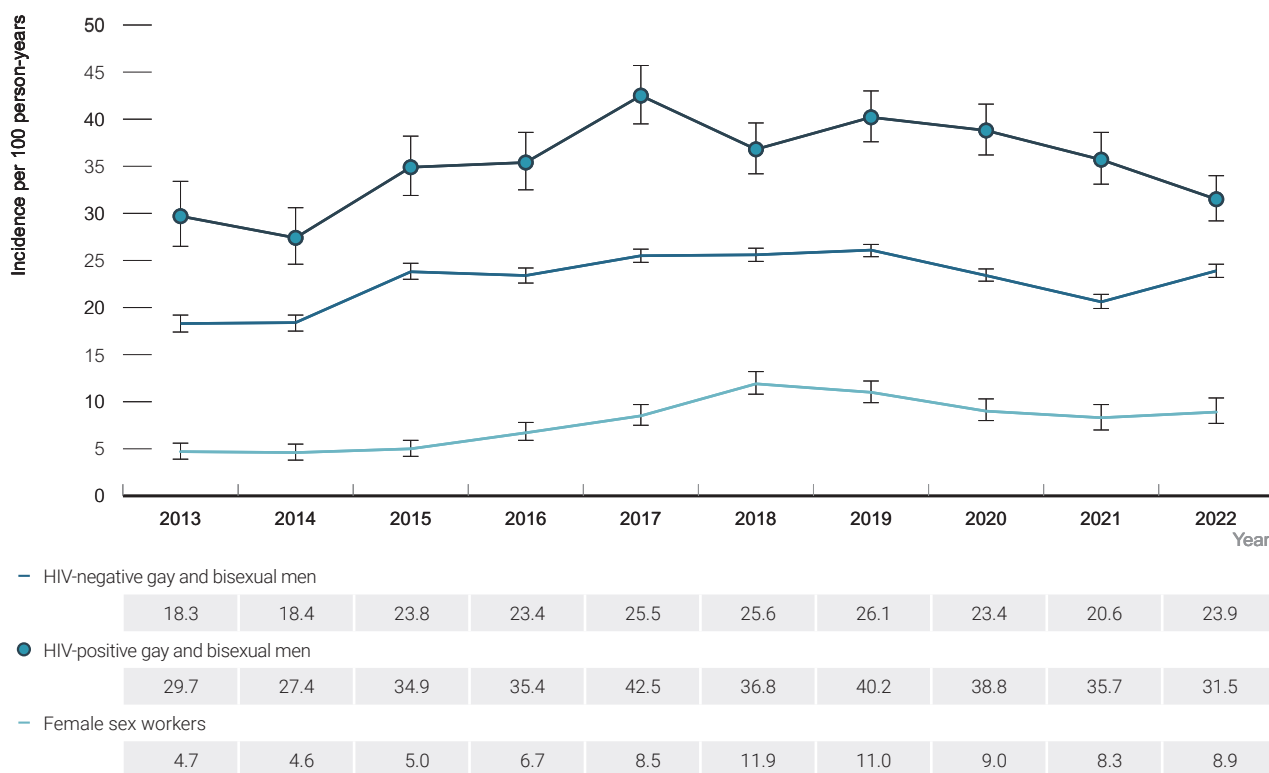
Source: Australian National Notifiable Diseases Surveillance System; Medicare.

5.3 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 ACCESS 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) ⁽⁵⁾. These incidence estimates represent populations attending sexual health clinics and may not be generalisable to the broader priority populations.

In 2022, gonorrhoea incidence was 31.5 new infections per 100 person-years among HIV-positive gay and bisexual men 32% higher compared with HIV-negative gay and bisexual men (23.9 per 100 person-years). Between 2013 and 2022, gonorrhoea incidence steadily increased among HIV-negative gay and bisexual men (31% increase) compared with a marginal increase among HIV-positive gay and bisexual men (6% increase) (Figure 28). Among female sex workers, gonorrhoea incidence increased by 89% from 3.4 per 100 person-years in 2013 to 7.9 per 100 person-years in 2022 (Figure 28). Caution should be taken with interpretation as confidence intervals overlap between some years, indicating that between-year differences are not statistically significant.

Figure 28 Gonorrhoea incidence in sexual health clinic attendees by population, 2013 – 2022



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

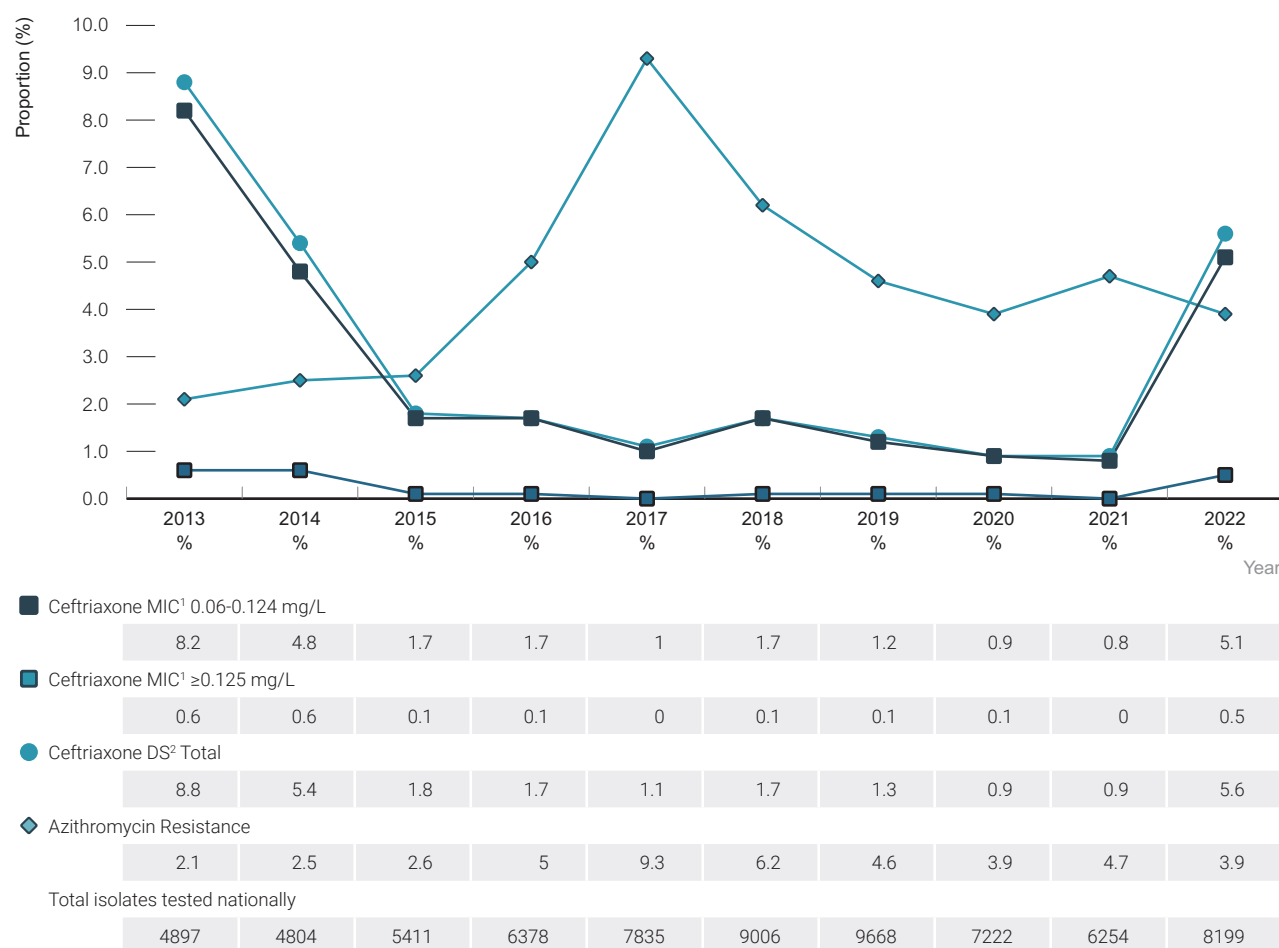
5.4 Antimicrobial resistance

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).

The World Health Organization recommends a reporting threshold for the decreased susceptibility to ceftriaxone (ceftriaxone minimum inhibitory concentration) as ≥ 0.125 mg. Between 2013 and 2022, the proportion of gonococcal isolates tested with a decreased ceftriaxone susceptibility (≥ 0.125 mg) remained low, and was 0.5% in 2022 (Figure 29).

In Australia, gonococcal isolates with ceftriaxone minimum inhibitory concentration values of ≥ 0.06 mg/L have been reported since 2001. Between 2013 and 2021, the proportion of gonococcal isolates tested for antimicrobial resistance with decreased susceptibility to ceftriaxone (≥ 0.06 mg/L), declined from 8.2% in 2013 to 0.8% in 2021. In 2022, this proportion increased to 5.1%, predominantly due to the rapid expansion of the *N. gonorrhoeae* clone, ST7827, in New South Wales^(11,12).

Figure 29 Proportion of gonococcal isolates tested at the Australian Gonococcal Surveillance Programme with decreased susceptibility to ceftriaxone, 2013 – 2022, by state/territory



Note: 1 minimum inhibitory concentration;
2 decreased susceptibility.

Source: Lahra, Monica M et al. "Australian Gonococcal Surveillance Programme Annual Report, 2022." Communicable diseases intelligence (2018) vol. 47 10.33321/cdi.2023.47.45. 24 Aug. 2023, doi:10.33321/cdi.2023.47.45

6 Human papillomavirus infection

In Australia all girls aged 12 to 13 years have been routinely offered at least two doses of human papilloma virus (HPV) vaccination since 2007, as have boys of the same age since 2013. The Genital Warts Surveillance Network is a sentinel surveillance system that includes over 50 sexual health clinics across Australia and provides evaluation of the population-level effects of the Australian vaccination program. The network also monitors epidemiological trends of genital wart diagnoses by routinely collected de-identified data on demographics and sexual behaviours associated with genital wart clinical diagnoses from patient management systems.

Information available from sexual health clinics included in the Genital Warts Surveillance Network has shown a considerable reduction in the proportion of Australian-born non-Indigenous females under 21 years of age diagnosed with genital warts at first visit among, from 10.6% in 2007 to 0.2% in 2022 (Figure 30). In the same period, among women aged 21 to 29 years there was also a decline in the proportion who were diagnosed with genital warts at first visit from 12.5% in 2007 to 0.7% in 2022, reflecting the catch-up vaccination campaign in women aged up to 26 years between 2007 and 2009. Among women aged 30 years or older, there was a more gradual decline from 5.5% in 2007 to 2.5% in 2022.

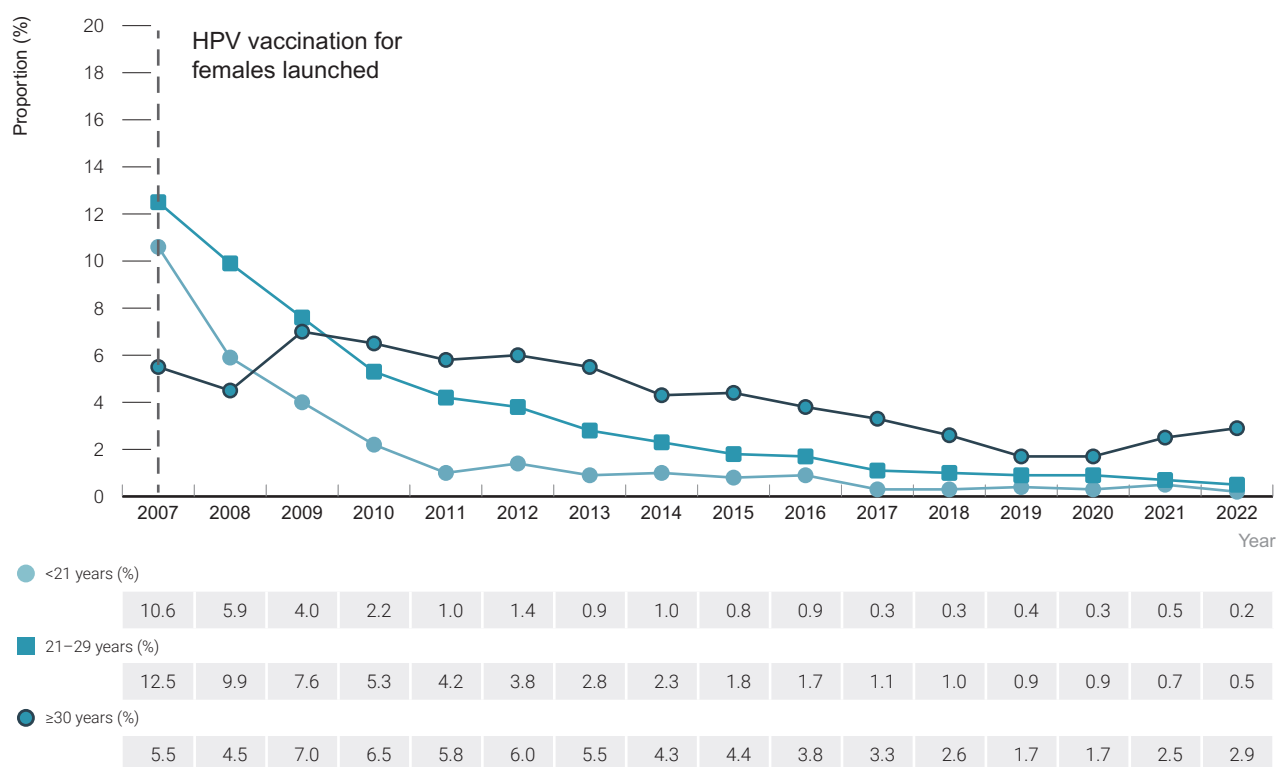
Among Australian-born non-Indigenous heterosexual males aged under 21 years, there was a reduction in the proportion diagnosed with genital warts at first visit from 8.8% in 2007 to 0.3% in 2022 (Figure 31). The proportion of genital warts diagnoses in men aged 21 to 29 years declined from 17.1% in 2007 to 1.3% in 2022. Among men aged 30 years or older, this proportion declined from 10.1% in 2007 to 3.4% in 2022.

Among Aboriginal and Torres Strait Islander females aged under 21 years, the proportion diagnosed with genital warts at first visit declined from 6.9% in 2007 to 0.0% in 2022. Among women aged 21 to 29 years the proportion diagnosed with genital warts reduced from 4.7% in 2007 to 0.9% in 2022. The proportion of Aboriginal and Torres Strait Islander women aged 30 years or older diagnosed with genital warts declined from 3.3% in 2007 to 2.0% in 2022 (Figure 32).

Among Aboriginal and Torres Strait Islander males aged under 21 years, the proportion diagnosed with genital warts at first visit declined from 3.9% in 2007 to 0.0% in 2022. Among men aged 21 to 29 years the proportion diagnosed with genital warts reduced from 12.2% in 2007 to 1.7% in 2022. The proportion of Aboriginal and Torres Strait Islander men aged 30 years or older diagnosed with genital warts declined from 4.7% in 2007 to 1.5% in 2021 (Figure 33).

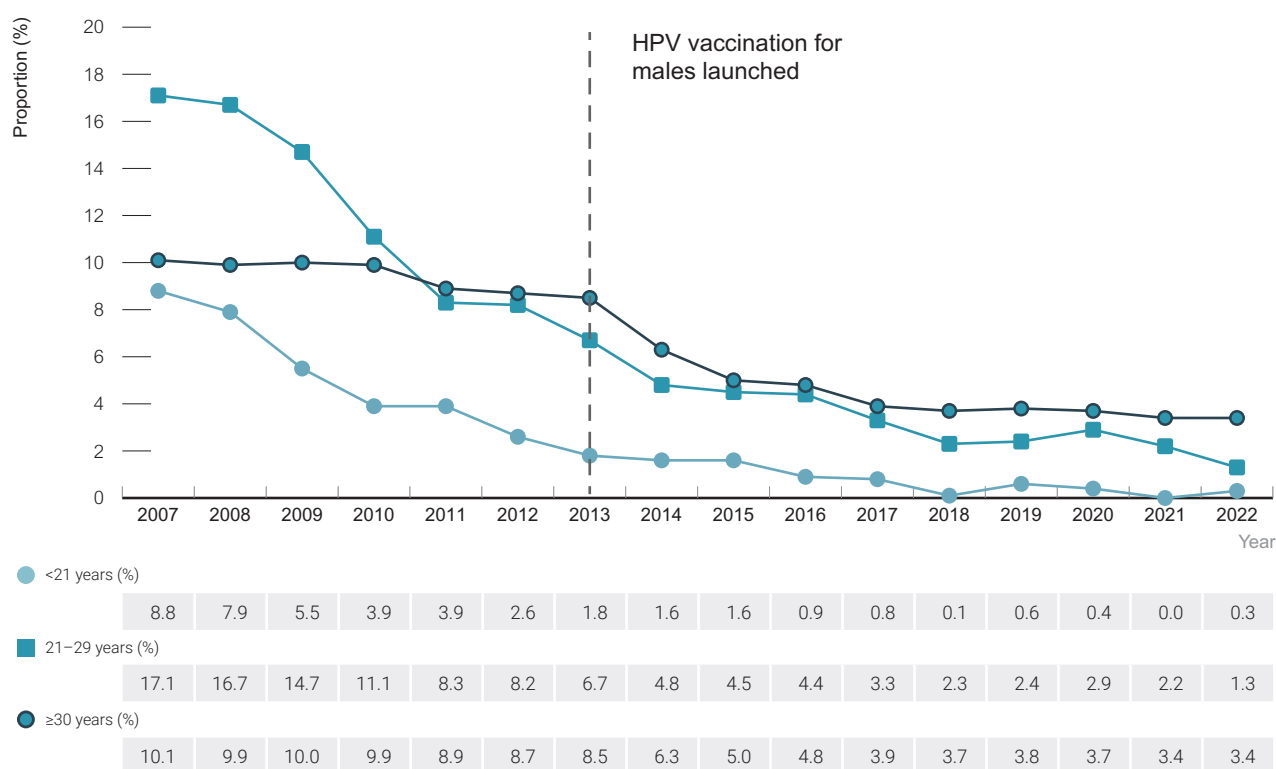
The proportion of genital warts diagnoses among non-Indigenous Australian-born gay and bisexual men at first visit declined from 7.8% in 2007 and to 1.3% in 2022. In this period, among bisexual men this proportion declined from 10.1% to 1.4% (Figure 34).

Figure 30 Proportion of Australian-born non-Indigenous females diagnosed with genital warts at first visit at sexual health clinics by age group, 2007 – 2022



Source: Genital Wart Surveillance Network.

Figure 31 Proportion of Australian-born non-Indigenous heterosexual males diagnosed with genital warts at first visit at sexual health clinics by age group, 2007 – 2022



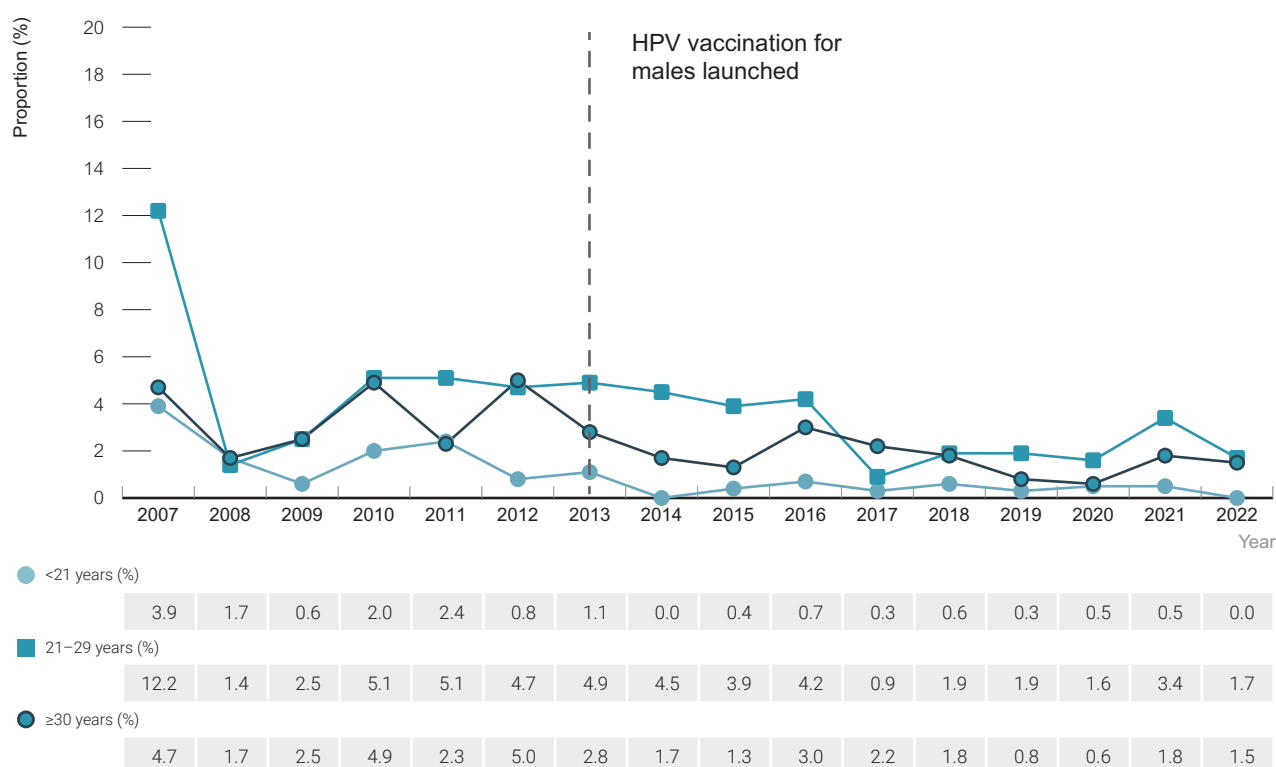
Source: Genital Wart Surveillance Network.

Figure 32 Proportion of Aboriginal and Torres Strait Islander females diagnosed with genital warts at first visit at sexual health clinics by age group, 2007 – 2022



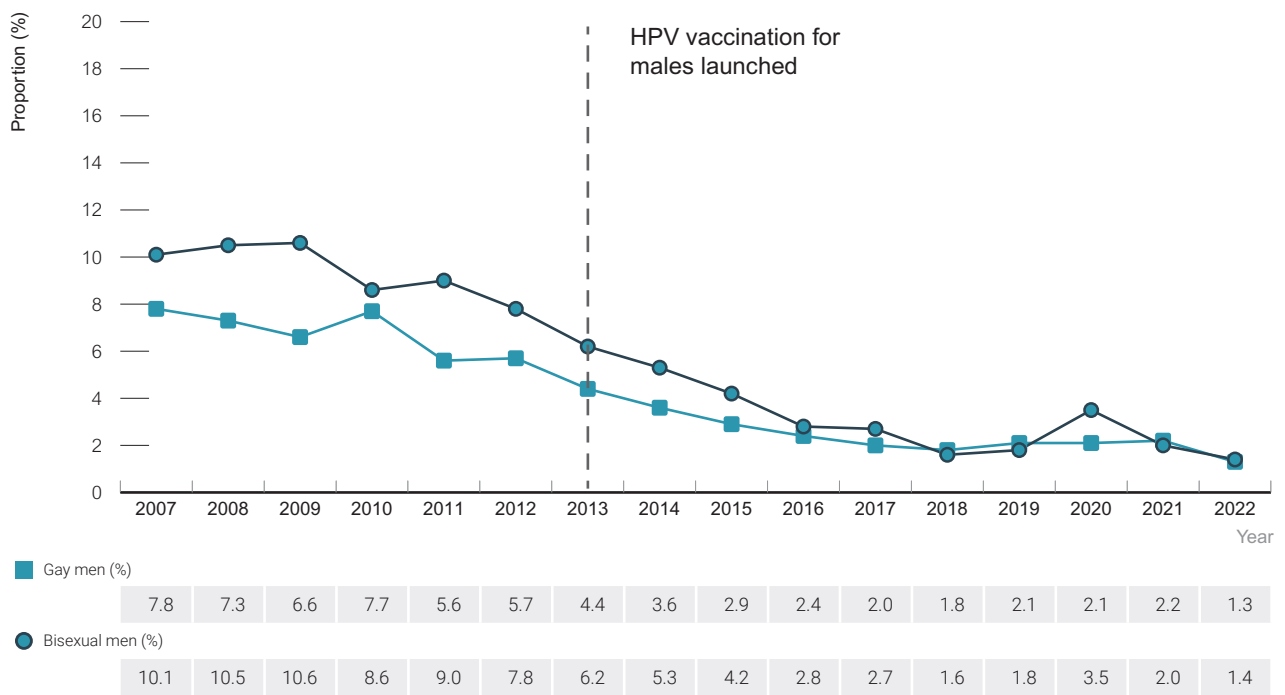
Source: Genital Wart Surveillance Network.

Figure 33 Proportion of Aboriginal and Torres Strait Islander males diagnosed with genital warts at first visit at sexual health clinics by age group, 2007 – 2022



Source: Genital Wart Surveillance Network.

Figure 34 Proportion of Australian-born non-Indigenous gay or bisexual men diagnosed with genital warts at first visit at sexual health clinics, 2007 – 2022



Source: Genital Wart Surveillance Network.

7 Donovanosis

Australia is on track to eliminate donovanosis, which was once a regularly diagnosed STI among remote Aboriginal communities. Since 2013 there has only been one case notified, in 2014 (Data not shown).

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