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# Surveillance of sexually transmitted infections and blood-borne viruses in South Australia, 2019

Communicable Disease Control Branch

SA Health



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### **Disclaimer**

The information presented in this report is based on laboratory and medical notifications received and investigated since 2010. As the completeness of datasets may be influenced by several factors including the timeliness of laboratory and medical reporting, changes in surveillance methodology or diagnostic testing and the health seeking behaviour of individuals, these data are provisional and subject to revision.

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## Acronyms

Aboriginal	Used respectfully as an all-encompassing term for the Aboriginal and Torres Strait Islander populations in South Australia
ABS	Australian Bureau of Statistics
ASHC	Adelaide Sexual Health Centre, Royal Adelaide Hospital, SA Health
BBV	blood borne viruses
CDNA	Communicable Diseases Network Australia. Provides national public health co-ordination and leadership and supports best practice for the prevention and control of communicable diseases. CDNA is a sub-committee of the Australian Health Protection Principal Committee.
Chlamydia	<i>Chlamydia trachomatis</i>
GP	general practitioner
HBV	hepatitis B
HCV	hepatitis C
HDV	hepatitis D
HIV	human immunodeficiency virus
IDU	injecting drug use
MSM	men who have sex with men (includes both homosexual and bisexual men)
STI	sexually transmissible infections

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## Introduction

The Communicable Disease Control Branch, SA Health conducts surveillance for sexually transmissible infections (STI) and blood borne viruses (BBV) in South Australia under the legislative framework of the *South Australian Public Health Act 2011*. The surveillance system in South Australia (SA) utilises a dual notification strategy where the laboratory ('laboratory notification') and the diagnosing medical practitioner ('medical notification') provide information on each episode of infection. A person could be notified more than once during the reporting period and with the same or more than one type of infection. Information collected as part of the notifiable diseases surveillance system is entered into a database at the time of notification, and analysed. Cases are reported by date of diagnosis within this report. The case definitions used for classifying the STI and BBV in this report is consistent with criteria agreed upon nationally by the Communicable Diseases Network Australia (CDNA). These definitions are available online at <http://www.health.gov.au/internet/main/publishing.nsf/Content/cdna-casedefinitions.htm>.

Rates of reported infections by year were expressed as cases per 100 000 population, with South Australian estimated residential population data per year obtained from the 2020 Census data published by the Australian Bureau of Statistics (ABS) (3101.0 Australian Demographic Statistics, updated December 2020). Infection rates for Aboriginal and Torres Strait Islander populations were also calculated using denominator population data as published by the ABS (3238.0 Estimates and Projection, Aboriginal and Torres Strait Islander Australian, 2006 to 2031). In 2019, information on Aboriginal status did not differentiate between Aboriginal and Torres Strait Islander peoples. The term 'Aboriginal' is used in this document respectfully as an all-encompassing term for the Aboriginal and Torres Strait Islander population of South Australia.

The ABS Standard Australian Classification of Countries (SACC) 2016, was used to categorise country and major regions of birth.

Interstate residents diagnosed with STI or BBV in South Australia were excluded from the analysis as these cases would be reported in their home jurisdictions.

The main findings in this epidemiological report are presented as text, tables and figures. All data contained in this report are to the end of 2019, as reported at February 2021. These data are considered provisional and subject to revision as additional information becomes available.



## Main findings

In 2019, there were 9516 new notifications of STI and BBV in SA (Table 1). This figure represents a 11% increase in the number of new notifications compared to notifications received in 2018 (n=8605).

In 2019, there were 6430 notifications of *Chlamydia trachomatis* (chlamydia) making this the most commonly notified STI in South Australia. The notification rate of chlamydia in 2019 was 365 per 100 000 population and has been stable over the past five years. In 2019, the notification rate in the Aboriginal population decreased to 820 per 100 000 population compared to 1042 per 100 000 population in 2018. The demographics of people diagnosed with chlamydia have remained relatively stable over the past five years. In 2019, 54 per cent of people diagnosed with chlamydia were females and 75 per cent of all cases were aged less than 30 years.

There were no notifications of donovanosis in 2019.

There were 2094 notifications of gonorrhoea in 2019. The notification rate of gonorrhoea increased from 74 per 100 000 population in 2018 to 119 per 100 000 population in 2019. The notification rate in the Aboriginal population was 928 per 100 000 population compared to 99 per 100 000 population in the non-Indigenous population. There were more infections in males (67%) than females. Males diagnosed with gonorrhoea in 2019 were more likely to report sexual contact with males (49%), whereas females were most likely to report sexual contact with males (86%). The majority of cases were Australian born (79%).

There were 161 notifications of infectious syphilis in 2019 compared to 204 notifications in 2018. The notification rate of infectious syphilis in 2019 was 9.14 per 100 000 population, a decrease from 11.7 per 100 000 population in 2018. In 2019, 84 per cent of notifications were in males, the majority being among men who have sex with men (MSM) (70%). Infectious syphilis remains disproportionately higher in the Aboriginal population with the focus of an ongoing multijurisdictional outbreak investigation occurring in Adelaide in 2019. Infectious syphilis notifications in the Aboriginal population decreased to 76 per 100 000 in 2019, compared to 91 per 100 000 in 2018. As part of the response to the multijurisdictional outbreak of syphilis, SA Health established a syphilis register for all South Australian Aboriginal and Torres Strait Islander cases in 2019.

There were no notifications of congenital syphilis in 2019.

There were 148 notifications of unspecified (non-infectious) syphilis in 2019. The notification rate was 8.41 per 100 000 population in 2019 compared to 5.16 per 100 000 in 2018. Cases were mainly in males (59%), and the majority of cases were aged over 30 years (86%). Rates were disproportionately higher in the Aboriginal population at 175 per 100 000 population compared to 4 per 100 000 in the non-Indigenous population.

There were 50 new diagnoses of human immunodeficiency virus (HIV) infection in 2019. The notification rate of newly diagnosed HIV infection in 2019 was 2.84 per 100 000 population, similar to that in each of the previous four years. The notification rate in the Aboriginal population increased to 4.4 per 100 000 in 2019, from 2.3 per 100 000 in 2018 (noting that the small number of cases in the Aboriginal population lead to unstable rates). Thirty-eight of the 50 notifications were in males (76%).

In 2019, 68% of male cases reported male-to-male sex. Of these, 25 males reported acquiring their infection overseas and 13 males acquiring their infection in SA. Sexual contact was the predominant mode of transmission in both males and females (36/50; 72%), six males reported injecting drug use (IDU) as a potential risk exposure for their HIV infection. Australia was the most frequently reported country of birth for cases in 2019 (19/50; 38%), followed by the major regions of Sub-Saharan Africa (22%), and North Africa and Middle East (20%). Where CD4 counts were available, in 2019, 28 per

cent (14/50) had CD4 lymphocyte counts indicative of late diagnosis. Consistent with previous years, subtype B remains the main circulating strain in SA.

There were five notifications of newly acquired hepatitis B infection in 2019, below the five-year average (2014-2018) of seven cases per year. There were no notifications in the Aboriginal population, and all the cases notified in 2019 were males. Two cases were Australian born, one case each was born in North-West Europe and South-East Asia, and the country of birth of one case was not reported. Three cases were acquired overseas.

There were 281 notifications of unspecified hepatitis B infection reported in 2019, a decrease compared to the five-year average (2014-2018) of 314 cases per year. The notification rate has declined in the Aboriginal population over the past five years to a low of 11.1 per 100 000 population in 2019. The notification rate in the non-Indigenous population in 2019 was 16.1 per 100 000. In 2019, cases were reported predominantly in males (53%) and females (47%). Eighty-eight per cent of cases were born outside of the Oceania and Antarctica major region, predominantly in South-East Asia and North-East Asia. Risk markers were largely unknown for cases, and migrant screens and BBV screens were the most common reasons for testing.

There were 28 notifications of newly acquired hepatitis C in 2019. The cases were evenly distributed between males and females (50%), and 75% were aged 30 years and over. The notification rate of newly acquired hepatitis C cases in the Aboriginal population was 22.2 per 100 000 compared to 1 per 100 000 in the non-Indigenous population. Most cases were born in the major region of Oceania and Antarctica (89%). The most commonly reported risk marker was IDU in the previous two years (75%). The next most common risk marker was imprisonment (43%).

The notification rate of unspecified hepatitis C infection was 17.8 per 100 000 population in 2019, with a total of 313 notifications in 2019 compared to 385 in 2018. In 2019, 87% of notifications were for persons aged over 30 years and 63% of notifications were in males. IDU was a risk marker in 63% of cases. Sixty-seven per cent of cases were for persons born in the Oceania and Antarctica major region. Consistent with previous years, the notification rate in the Aboriginal population was higher at 93.3 per 100 000 than in the non-Indigenous population at 15.4 per 100 000 in 2019.

There were six new diagnoses of hepatitis D infection in 2019, below the five-year average (2014-2018) of 8.4 cases per year. The notification rate was 0.3 per 100 000 population.

**Table 1 Notifications of STI and BBV in South Australia, 2014 to 2019**

Disease	2014	2015	2016	2017	2018	Five-year average 2014-2018	2019
<i>Chlamydia trachomatis</i>	5550	5454	5487	5915	6268	5735	6430
Gonorrhoea	750	813	1110	1272	1289	1047	2094
Donovanosis	0	0	0	0	0	0	0
Syphilis: Infectious	29	68	89	161	204	110	161
Syphilis: Non-infectious	NA	NA	55	62	90	NA	148
Syphilis: Congenital	0	0	0	1	0	0	0
Human immunodeficiency virus	54	57	53	60	39	53	50
Hepatitis B: Newly acquired	7	7	6	12	4	7.2	5
Hepatitis B: Unspecified	364	339	305	284	278	314	281
Hepatitis C: Newly acquired	45	44	44	32	43	42	28
Hepatitis C: Unspecified	520	491	486	445	385	385	313
Hepatitis D	9	9	9	10	5	8	6
<b>TOTAL</b>	<b>7 328*</b>	<b>7 282*</b>	<b>7 644</b>	<b>8 254</b>	<b>8 605</b>	<b>NA+</b>	<b>9 516</b>

\* Annual total does not include non-infectious syphilis for 2014 and 2015

NA = Not available; NA+= not applicable to calculate a five-year average for all diseases when one disease was not under surveillance for the full five-year period.

## Chlamydia

In 2019, chlamydia was the most frequently reported STI in SA, consistent with previous years (Table 1).

There were 6 430 notifications of chlamydia in SA in 2019, an increase compared to 2018 (6 268 notifications) (Table 2), and the five-year average (2014-2018) of 5 735 notifications per year. The number of notifications per year has been above 5 000 per year since 2011, with consistently more females than males notified per year (Figure 1). The chlamydia notification rate in 2019 was 365 per 100 000 population, consistent with the rate in 2018 of 359 per 100 000 population. Where information was available, the notification rate in the Aboriginal population was 820 per 100 000 population, a decrease from the 2018 rate of 1 041 per 100 000 population. This figure should be interpreted with caution given 25 per cent of chlamydia notifications were missing Aboriginal status data. The notification rate in non-Indigenous cases was 259 per 100 000 in the non-Indigenous population. Rates of notification remain consistently higher in the Aboriginal population compared to the non-Indigenous population from 2015 to 2019 (Figure 2).

Fifty-four per cent of notifications in 2019 were in females (3 502/6 430). Notifications were most common in people aged 15 to 29 years (4 803/6 430; 75%). The age specific notification rates in females (2 457 per 100 000 population) and males (1 701 per 100 000 population) were highest in the 20-24 year age group, with higher rates in males compared to females in the age groups over 30 years (Table 3).

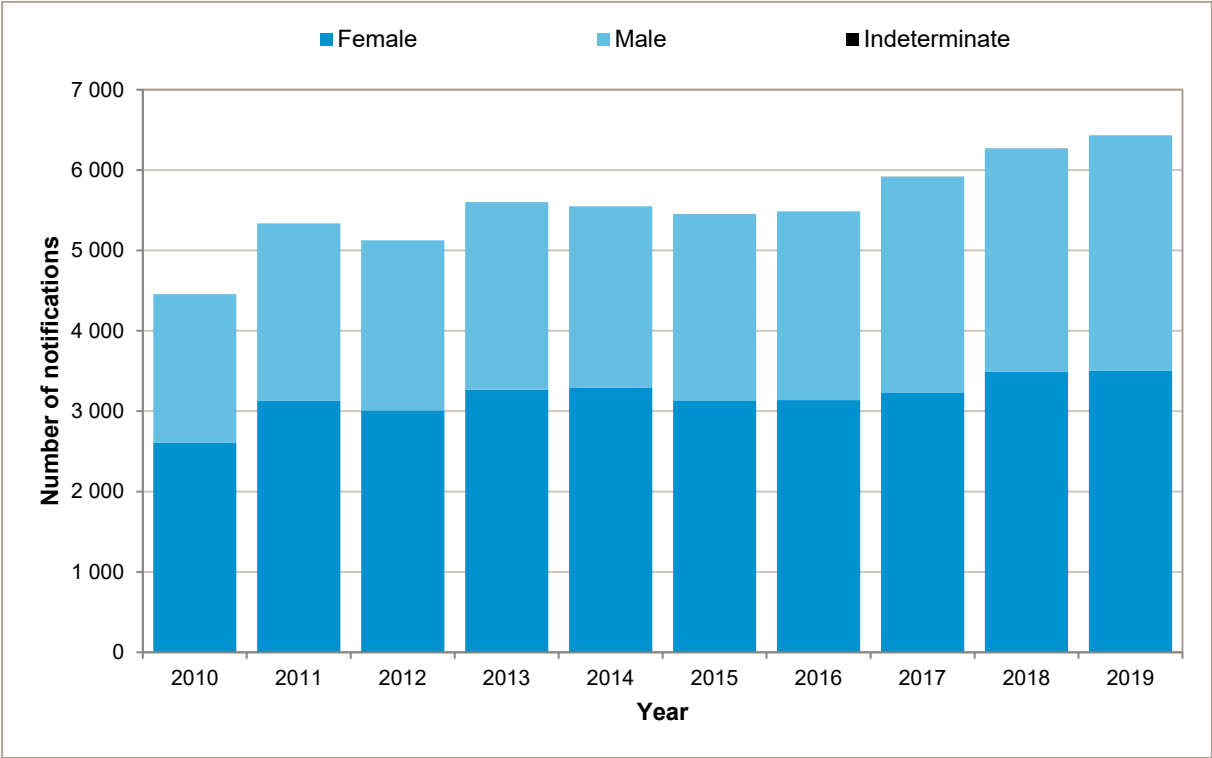
General practitioners (GPs) located in metropolitan Adelaide were the most frequent notifiers (30%; 1 934), followed by the specialist sexual health service Adelaide Sexual Health Centre (ASHC) (15%; 957) and country GPs (6%; 379) (Table 4).

There were 7 219 positive clinical specimens reported from the 6 430 chlamydia cases notified in 2019. Several cases submitted multiple specimens, including different specimen types. Overall, urine specimens were most common (4 658/7 219; 65%) followed by vaginal (1 026/7 219; 14%) and cervical swabs (659/7 219; 9%) (Table 5).

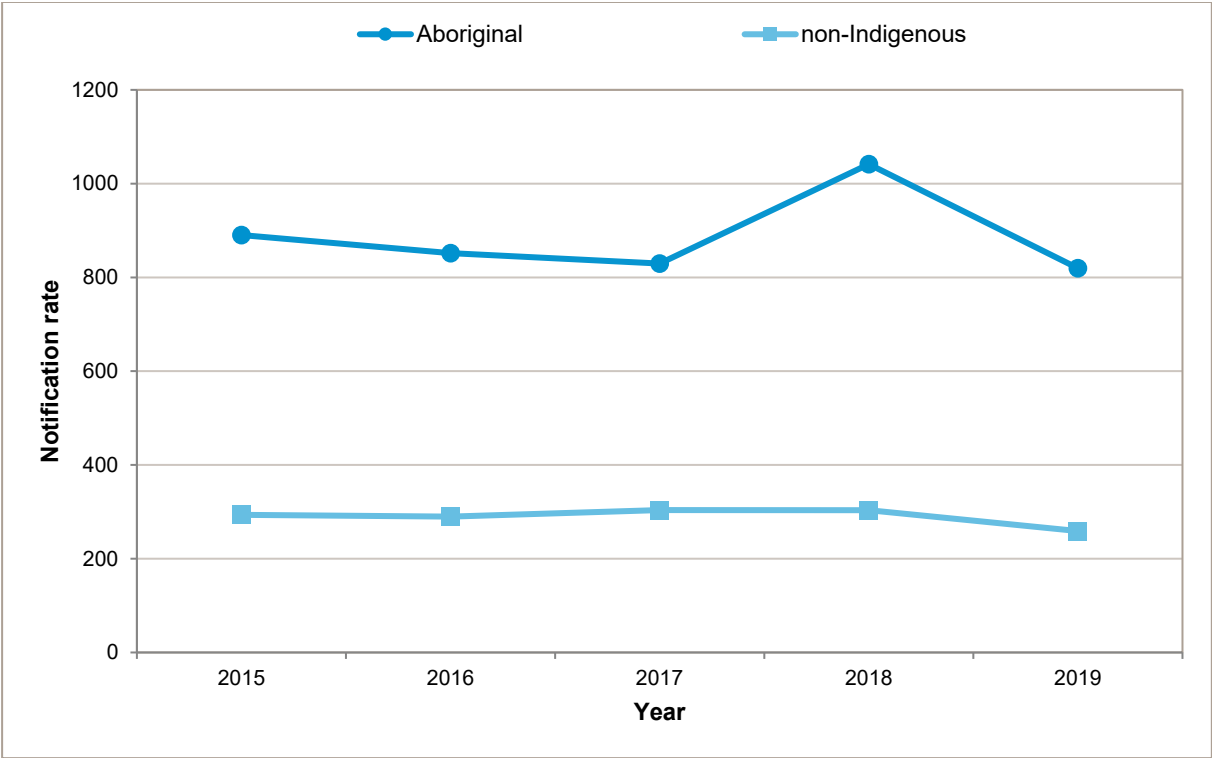
It is important to note that active follow-up of outstanding medical notifications for chlamydia ceased in 2019. Therefore, epidemiological information previously supplied by doctors on a range of factors including Aboriginal status, clinical presentation and risk exposures will differ in completeness from datasets presented in previous years.

In 2019, 37.5 per cent of laboratory notifications were missing a corresponding medical notification so caution should be used interpreting the following tables. Additionally, 25 per cent of chlamydia notifications were missing Aboriginal status data compared to 10% in 2018. Incomplete information on Aboriginal status can underestimate the true extent of these infections in the Aboriginal population and may not reflect national trends.

**Figure 1 Number of new notifications of chlamydia in South Australia by sex, 2010 to 2019**



**Figure 2 Chlamydia notification rate per 100 000 population by Aboriginal status, South Australia, 2015 to 2019**



**Table 2 Number of notifications of chlamydia by demographic characteristics, South Australia, 2015 to 2019**

	Year of diagnosis				
	2015	2016	2017	2018	2019
<b>Number of notifications</b>	<b>5 454</b>	<b>5 487</b>	<b>5 915</b>	<b>6 268</b>	<b>6 430</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	370	360	358	459	369
Non-Indigenous	4 794	4 853	5 119	5 157	4 443
Not stated	290	274	438	652	1 618
<b>Sex</b>					
Female	3 134	3 139	3 227	3 493	3 502
Male	2 320	2 348	2 687	2 774	2 927
Indeterminate	0	0	1	1	1
<b>Age-group (years)</b>					
0-14	13	28	18	19	20
15-19	1 126	1 037	1 123	1 163	1 071
20-24	2 042	2 018	2 176	2 326	2 400
25-29	1 116	1 198	1 261	1 296	1 332
30-39	758	813	891	978	1 056
40-49	257	250	287	313	331
50-59	108	112	113	129	151
60+	34	31	46	44	69
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	4 268	4 308	4 518	4 523	3 665
North-West Europe	121	100	107	88	112
Southern and Eastern Europe	28	32	35	32	42
North Africa and the Middle East	38	42	53	38	33
South-East Asia	134	123	131	144	136
North-East Asia	137	131	106	117	121
Southern and Central Asia	30	34	45	52	62
Americas	40	37	21	34	38
Sub-Saharan Africa	103	119	137	191	142
Not reported	265	561	762	1 049	2 079

**Table 3 Age-specific rates of chlamydia, South Australia, 2019**

Age group (years)	Female		Male	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
0-14	16	10.64	4	2.53
15-19	793	1 585	278	528
20-24	1 383	2 457	1 017	1 701
25-29	633	1 089	698	1 193
30-39	487	419	569	499
40-49	141	128	190	175
50-59	43	37.47	108	97.5
60+	6	2.59	63	31

**Table 4 Exposure characteristics, test information and notification source for chlamydia notifications, by sex in South Australia, 2019**

	Female	Male	Indeterminate	Total
<b>Number of notifications</b>	<b>3 502</b>	<b>2 927</b>	<b>1</b>	<b>6 430</b>
<b>Exposure characteristics</b>				
<i>Sexual partners in last 12 months</i>				
Female	41	1 304	0	<b>1 345</b>
Male	2 002	454	1	<b>2 457</b>
Male and female	33	53	0	<b>86</b>
No sexual contact	1	0	0	<b>1</b>
Unknown	1 425	1 116	0	<b>2 541</b>
<i>Likely location of infection acquisition</i>				
South Australia	2 008	1 727	1	<b>3 736</b>
Interstate	18	26	0	<b>44</b>
Overseas	50	71	0	<b>121</b>
Unknown	1 426	1 103	0	<b>2 529</b>
<i>Worked as a sex worker in last 12 months</i>				
Yes	22	9	0	<b>31</b>
No	1 911	1 750	1	<b>3 662</b>
Unknown	1 569	1 168	0	<b>2 737</b>
<i>Had sexual activity with a sex worker in last 12 months</i>				
Yes	10	23	0	<b>33</b>
No	1 962	1 710	1	<b>3 673</b>
Unknown	1 530	1 194	0	<b>2 724</b>
<b>Reason for test</b>				
STI screening	931	658	1	<b>1 590</b>
Clinical symptoms	796	726	0	<b>1 522</b>
Contact of confirmed case	365	518	0	<b>883</b>
Screening for other purposes	171	119	0	<b>290</b>
Antenatal screening	71	0	0	<b>71</b>
Prison screening	2	4	0	<b>6</b>
Other/unknown	1 166	902	0	<b>2 068</b>
<b>Notification source</b>				
Metropolitan GP	1 205	729	0	<b>1 934</b>
ASHC	275	681	1	<b>957</b>
Country GP	230	149	0	<b>379</b>
SHINE SA	190	163	0	<b>353</b>
Public hospital	152	27	0	<b>179</b>
Nganampa Health Service	66	49	0	<b>115</b>
Other Aboriginal health services	25	16	0	<b>41</b>
Defence forces	11	24	0	<b>35</b>
Prison health service	12	16	0	<b>28</b>
O'Brien Street Practice	0	16	0	<b>16</b>
Other	7	5	0	<b>12</b>
Interstate public health unit	2	0	0	<b>2</b>
Unknown	1 327	1 052	0	<b>2 379</b>

**Table 5 Specimen collection sites for chlamydia notifications by sex, South Australia, 2019**

Specimen collection site	Female	Male	Indeter- minate	Total	(%)
Urine	2 021	2 637	0	4 658	(65)
Vagina swab	1 026	0	0	1 026	(14)
Cervix swab	659	0	0	659	(9)
Rectum swab	134	451	1	586	(8)
Urethra swab	1	93	0	94	(1)
Throat swab	3	10	0	13	(0)
Other swab (including swab not further specified)	101	30	0	131	(2)
Unknown/not stated	42	10	0	52	(1)
<b>Total</b>	<b>3 987</b>	<b>3 231</b>	<b>1</b>	<b>7 219</b>	<b>(100)</b>

## Gonorrhoea

In 2019, there were 2 094 notifications of gonorrhoea in SA. This figure represents a sharp rise in the number of notified cases when compared to 1 289 cases in 2018, and an increase when compared to the five-year average (2014-2018) of 1 047 cases per year. Figure 3 is a 10-year epidemic curve of gonorrhoea in SA by sex, illustrating the annual increase in cases since 2013. The notification rate of gonorrhoea in 2019 was 119 per 100 000 population, higher than that of 2018 at 74 per 100 000 population. In 2019, there were 418 notifications in people that identified as Aboriginal. The notification rate in the Aboriginal population rose to 928 per 100 000 in 2019, up from 785 per 100 000 in 2018. Notification rates in the non-Indigenous population remained lower than for the Aboriginal population at 96 per 100 000 in 2019 and 55 per 100 000 in 2018 (Figure 4).

Notifications in 2019 were predominantly in males (1 397/2 094; 68%), consistent with previous years. An increase in notifications was observed across all age groups; 77 per cent (1 467/2 094) of notifications were in people aged 20 to 39 years. The median age of cases in 2019 was 30 years (range 0 to 77 years). There were two cases of gonococcal conjunctivitis in infants born to mothers with active disease. Four hundred and eighteen notifications were in people who identified as Aboriginal or Torres Strait Islander people, including 103 cases (25%) residing in metropolitan Adelaide and 286 (68%) from rural and remote regions of SA. The median age of Aboriginal cases was 26 years (range 0 to 54 years). Non-Indigenous cases were predominantly residents of metropolitan Adelaide at the time of their diagnosis (1 466/1 643; 89%). The majority of cases notified in 2019 were born in the Oceania and Antarctica major region (1 671/2 094; 80%), with 1 659 born in Australia. South-East Asia was the next most common major region for country of birth for cases in 2019 (Table 6).

The highest age specific notification rates were in the 25-29 years old age group for males (487 per 100 000 population) and 20-24 years old age group in females (291 per 100 000 population) (Table 7).

Males diagnosed with gonorrhoea in 2019 equally report sexual contact with males (604/1 397; 43%) compared to females (597/1 397; 43%), and 6% (77/1 397) reported sexual contact with both males and females. Whereas females were more likely to report sexual contact with males (593/693; 86%) than females (11/693; 2%) or males and females (17/693; 2%). Infections were most commonly acquired in SA (1 815/2 094; 87%). Twenty one cases reported working as a sex worker in 2019 (13 females and 8 males), and 53 cases reported sexual activity with a sex worker in the previous 12 months (8 females and 45 males) (Table 8).

The most commonly cited reasons for ordering a test in cases notified in 2019 were clinical symptoms (974/2 094; 47%) and STI screening (574/2 094; 27%), with a further 315 cases (15%) tested as they were a sexual contact of a previously confirmed case. Metropolitan GPs were the most common notification source (772/2 094; 37%), followed by the specialist sexual health service ASHC (572/2 094; 27%) (Table 8).

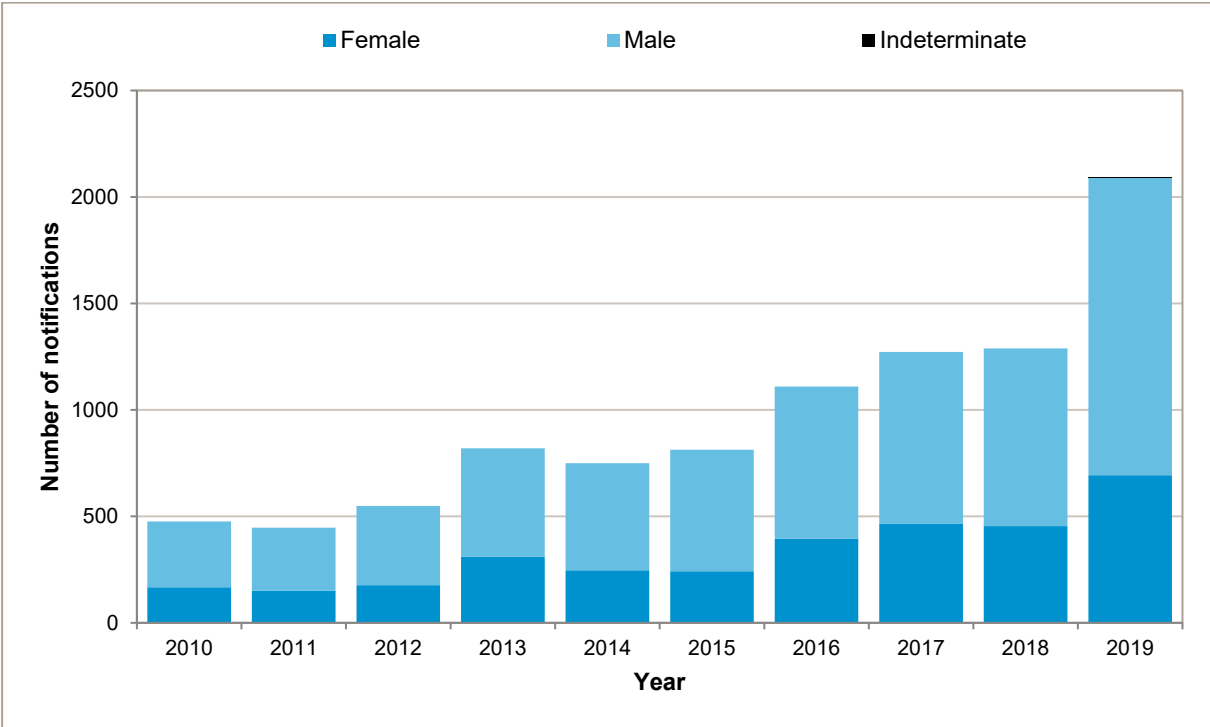
Of the 2 094 gonorrhoea notifications in 2019, 1 153 (55%) were reported as symptomatic infections (341 females, 810 males, 2 indeterminate) and 816 (39%) were reported as asymptomatic infections (297 females, 517 males, 2 indeterminate). Information was unknown or missing for 125 notifications.

There were 4 153 positive specimens reported from the 2 094 gonorrhoea cases notified in 2019. Several cases submitted multiple specimens, including different specimen types. Urine samples were the most common specimen type, with 1 332 specimens (32%), followed by rectal swabs (796; 19%) and urethral swabs (743; 18%) (Table 9).

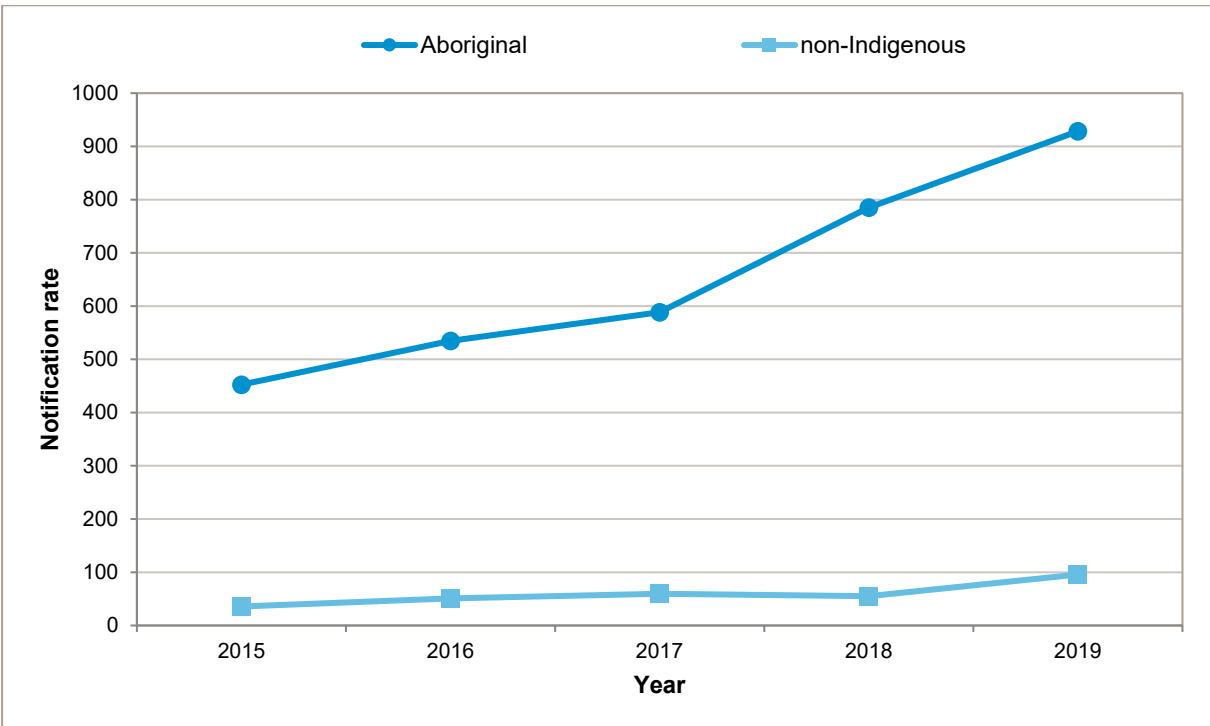


Gonococcal antibiotic susceptibility patterns are monitored by SA Pathology. All South Australian data is part of the Australian Gonococcal Surveillance Programme with annual reports published by the Australian Department of Health (<http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-pubs-annlrpt-gonoanrep.htm>). Retrospective molecular surveillance on a specimen collected in late 2018, detected a gonorrhoea strain resistant to ceftriaxone. An investigation established that the gonorrhoea strain originating from a heterosexual male was acquired overseas and there was no further transmission of this strain in Australia. The case received adequate antibiotic treatment from the GP and repeat clinical specimens were negative for *Neisseria gonorrhoeae*.

**Figure 3 Number of new notifications of gonorrhoea in South Australia by sex, 2010 to 2019**



**Figure 4 Gonorrhoea notification rate per 100 000 population, South Australia, by Aboriginal status, 2015 to 2019**



**Table 6 Number of notifications of gonorrhoea by demographic characteristics, South Australia, 2015 to 2019**

	Year of diagnosis				
	2015	2016	2017	2018	2019
<b>Number of notifications</b>	<b>813</b>	<b>1 110</b>	<b>1 272</b>	<b>1 289</b>	<b>2 094</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	188	226	254	346	418
Non-Indigenous	594	853	1 004	935	1 643
Not stated	31	31	14	8	33
<b>Sex</b>					
Female	242	396	465	454	693
Male	571	714	807	835	1 397
Indeterminate	0	0	0	0	4
<b>Age-group (years)</b>					
0-14	3	8	12	14	17
15-19	85	118	135	123	184
20-24	202	283	326	327	398
25-29	148	270	257	257	444
30-39	218	259	346	345	625
40-49	88	102	129	136	275
50-59	53	50	44	65	116
60+	16	20	23	22	35
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	625	891	1 088	1 095	1 671
North-West Europe	23	27	26	20	32
Southern and Eastern Europe	1	9	4	7	26
North Africa and the Middle East	7	7	5	6	18
South-East Asia	16	35	32	32	72
North-East Asia	14	18	19	26	30
Southern and Central Asia	10	21	10	11	35
Americas	14	11	4	11	17
Sub-Saharan Africa	0	7	17	14	50
Not reported	40	84	67	67	143

**Table 7 Age specific rates of gonorrhoea, South Australia, 2019**

Age group (years)	Female		Male	
	Number of notifications	Rate per 100 000 population	Number of notifications	Rate per 100 000 population
0-14	13	8.6	4	2.5
15-19	95	189.8	89	169.0
20-24	164	291.4	234	391.5
25-29	155	266.8	285	487.1
30-39	184	158.3	441	386.6
40-49	65	59.3	210	193.8
50-59	15	13.1	101	91.2
60+	2	0.9	33	16.3

**Table 8 Exposure characteristics, test information and notification source for gonorrhoea notifications, by sex in South Australia, 2019**

	Female	Male	Indeter- minate	Total
<b>Number of notifications</b>	<b>693</b>	<b>1 397</b>	<b>4</b>	<b>2 094</b>
<b>Exposure characteristics</b>				
<i>Sexual partners in last 12 months</i>				
Female	11	597	0	<b>608</b>
Male	593	604	1	<b>1 198</b>
Male and female	17	77	3	<b>97</b>
Transgender	0	1	0	<b>1</b>
No sexual contact	1	1	0	<b>2</b>
Unknown	71	117	0	<b>188</b>
<i>Likely location of infection acquisition</i>				
South Australia	609	1 202	4	<b>1 815</b>
Interstate	15	46	0	<b>61</b>
Overseas	4	42	0	<b>46</b>
Unknown	65	107	0	<b>172</b>
<i>Worked as a sex worker in last 12 months</i>				
Yes	13	8	0	<b>21</b>
No	553	1 199	4	<b>1 756</b>
Unknown	127	190	0	<b>317</b>
<i>Had sexual activity with a sex worker in last 12 months</i>				
Yes	8	45	0	<b>53</b>
No	530	1 116	4	<b>1 650</b>
Unknown	155	236	0	<b>391</b>
<b>Reason for test</b>				
Clinical symptoms	261	712	1	<b>974</b>
STI screening	203	370	1	<b>574</b>
Contact of confirmed case	139	174	2	<b>315</b>
Screening for other purposes	37	71	0	<b>108</b>
Prison screening	4	14	0	<b>18</b>
Antenatal screening	15	0	0	<b>15</b>
Other/unknown	34	56	0	<b>90</b>
<b>Notification source</b>				
Metropolitan GP	296	475	1	<b>772</b>
ASHC	69	500	3	<b>572</b>
Nganampa Health Service	111	93	0	<b>204</b>
Public hospital	66	38	0	<b>104</b>
Country GP	39	51	0	<b>90</b>
SHINE SA	24	60	0	<b>84</b>
Other Aboriginal health services	34	33	0	<b>67</b>
Prison health service	12	41	0	<b>53</b>
O'Brien Street Practice	1	40	0	<b>41</b>
Interstate public health unit	3	13	0	<b>16</b>
Private hospitals	1	0	0	<b>1</b>
Other	4	4	0	<b>8</b>
Unknown	33	49	0	<b>82</b>

**Table 9 Specimen collection sites for gonorrhoea notifications by sex, in South Australia, 2019**

Specimen collection site	Female	Male	Indeter- minate	Total	(%)
Urine	355	975	2	1 332	(32)
Rectum	59	733	4	796	(19)
Urethra	1	741	1	743	(18)
Vagina	464	0	2	466	(11)
Throat/pharynx	38	432	2	472	(11)
Cervix	246	0	3	249	(6)
Eye	6	14	0	20	(0)
Blood - venous	0	1	0	1	(0)
Other/not stated	34	40	0	74	(2)
<b>Total</b>	<b>1 203</b>	<b>2 936</b>	<b>14</b>	<b>4 153</b>	<b>(100)</b>

## Infectious syphilis

In 2019, there were 161 notifications of infectious syphilis (infections of less than two years' duration) in SA, a decrease compared to 2018 with 204 notifications (Figure 5) and an increase compared to the five-year average (2014-2018) of 110 notifications per year. From 2015 onwards, SA adopted the surveillance case definition for the Australian National Notifiable Diseases Surveillance System, which includes confirmed and probable infectious syphilis categories. Thirty of the cases in 2019 met the probable case definition, and 131 were confirmed cases. The notification rate in 2019 was 9.14 per 100 000 population, a decrease from 11.7 per 100 000 population in 2018.

Notifications in 2019 were predominantly in males (135/161; 84%), consistent with previous years (Table 10). The median age of all cases in 2019 was 34 years (range 19 to 72 years), an increase compared to 2018 with a median of 32 years. Thirty-four notifications were in people who identified as Aboriginal or Torres Strait Islander people. The median age of Aboriginal cases in 2019 was 31 years (range 19 to 54 years), compared to a median age of non-Indigenous cases of 36 years (range 19 to 72 years). Of the 34 notifications in Aboriginal people, 22 were residents of metropolitan Adelaide and 12 were residents of rural SA. Non-Indigenous cases were predominantly residents of metropolitan Adelaide at the time of their diagnosis (108/126; 86%). The majority of cases notified in 2019 were born in the Oceania and Antarctica major region (128/161; 80%); 126 cases from this region were born in Australia. A low number of cases were born in other geographical regions (Table 10).

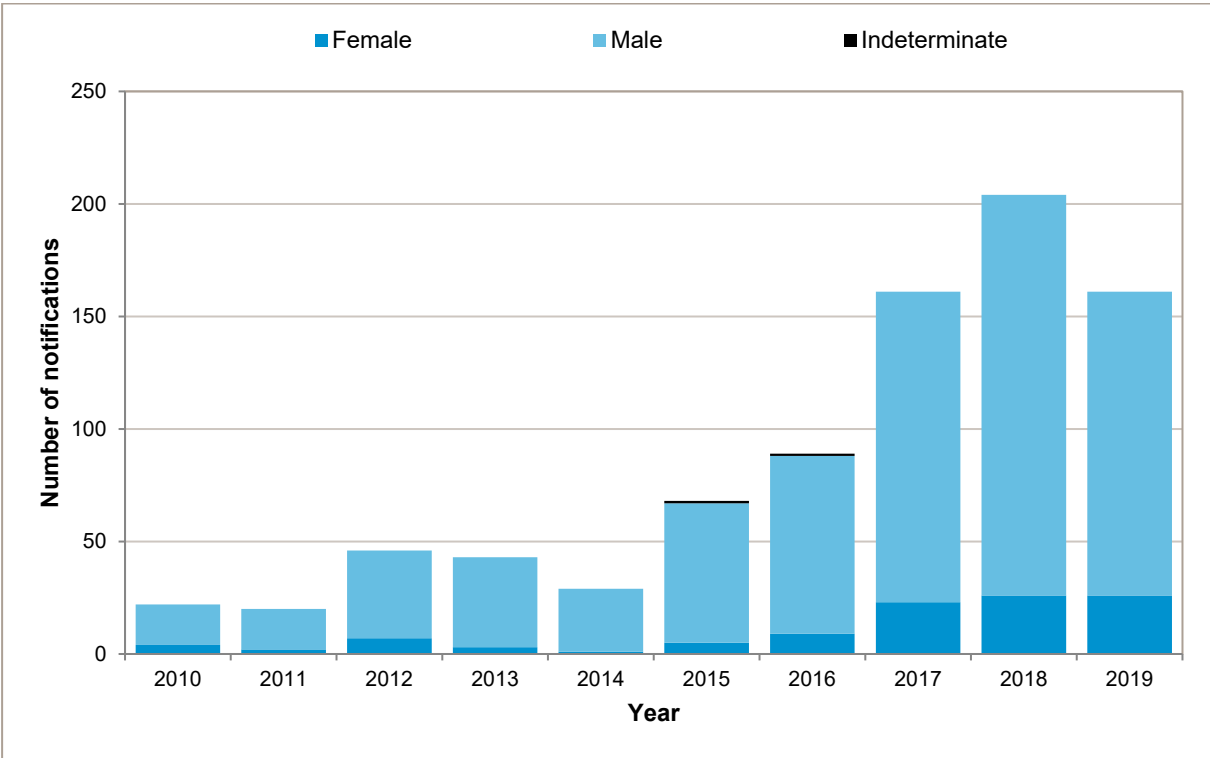
Notification rates in the Aboriginal population decreased to 75.5 per 100 000 in 2019, from 90.8 per 100 000 in 2018. Notification rates in the non-Indigenous population also decreased in 2019 to 7.4 per 100 000 compared to 9.7 per 100 000 in 2018 (Figure 6).

Males diagnosed with infectious syphilis in 2019 were most likely to report sexual contact with males (83/135; 61%) and males and females (13/135, 8%); females exclusively reported sexual contact with males (Table 11). Infections were most commonly acquired in SA (123/161; 76%). Three cases reported working as a sex worker in the 12 months prior to infection and five cases reported sexual activity with a sex worker in the 12 months prior to infection.

The most commonly cited reasons for ordering a test in cases notified in 2019 were clinical symptoms (71/161; 44%) and STI screening (59/161; 37%), with a further 14 cases (9%) tested as they were a sexual contact of a previously confirmed case. Specialist sexual health services were most likely to notify cases (ASHC 37%, O'Brien Street Practice 6%, SHINE SA 1%) in 2019, along with metropolitan GPs (26%) (Table 11).

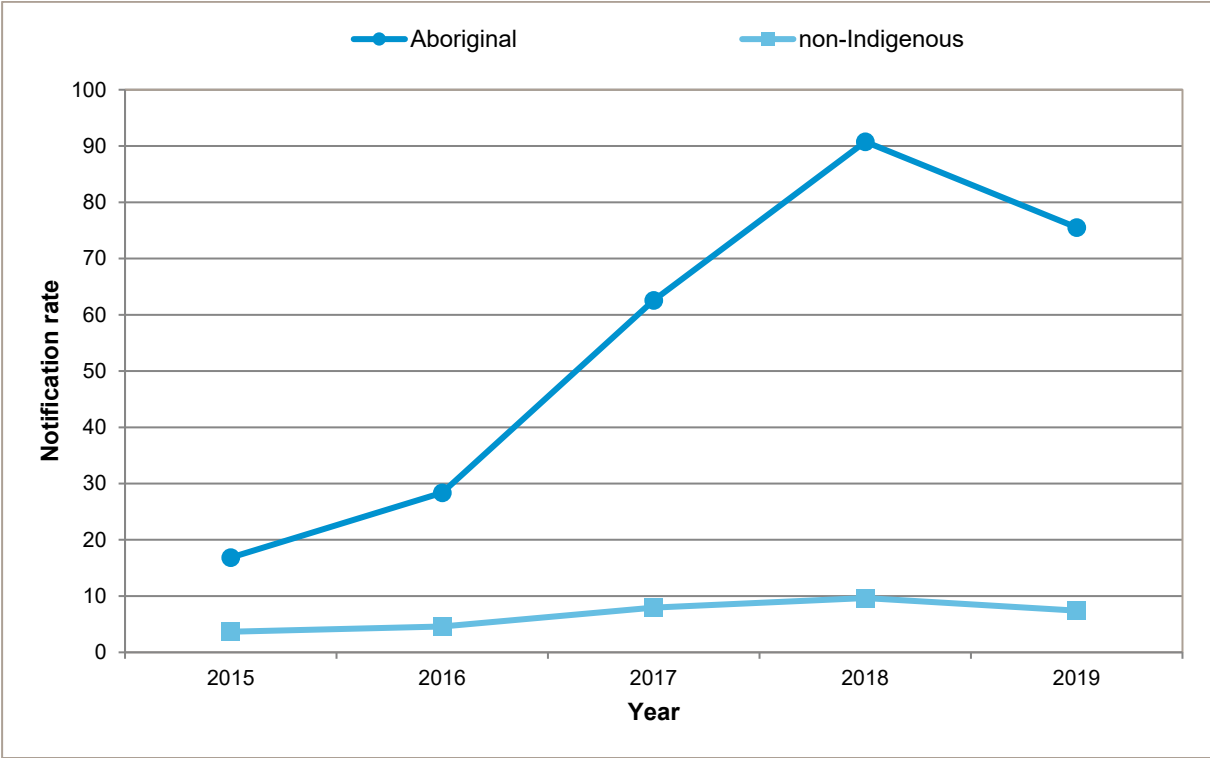
In 2019, the most commonly reported stage of syphilis at the time of notification was early latent syphilis (69/161; 43%), followed by primary syphilis (55/161; 34%) (Table 12).

**Figure 5** Number of new notifications of infectious syphilis in South Australia by sex, 2010 to 2019



Note: One case in 2015 and one case in 2016 did not have sex recorded and are not included in Figure 5.

**Figure 6** Infectious syphilis notification rate per 100 000 population, by Aboriginal status, South Australia, 2015 to 2019



**Table 10 Number of notifications of infectious syphilis by demographic characteristics, South Australia, 2015 to 2019**

	Year of diagnosis				
	2015	2016	2017	2018	2019
<b>Number of notifications</b>					
Confirmed	56	75	141	169	131
Probable	12	14	20	35	30
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	7	12	27	40	34
Non-Indigenous	61	77	134	164	127
Not stated	0	0	0	0	0
<b>Sex</b>					
Female	5	9	23	26	26
Male	62	79	138	178	135
Indeterminate	1	1	0	0	0
<b>Age-group (years)</b>					
0-14	0	0	0	0	0
15-19	0	2	2	2	3
20-24	8	12	16	44	19
25-29	16	20	27	39	33
30-39	15	23	47	47	55
40-49	15	19	26	36	17
50-59	8	9	27	18	23
60+	6	4	16	18	11
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	54	72	127	168	128
North-West Europe	6	3	6	6	6
Southern and Eastern Europe	0	1	4	2	3
North Africa and the Middle East	0	1	3	4	1
South-East Asia	2	3	7	6	5
North-East Asia	2	0	6	4	4
Southern and Central Asia	1	2	1	5	1
Americas	0	3	1	5	7
Sub-Saharan Africa	2	1	3	2	3
Not reported	1	3	3	2	3

**Table 11 Exposure characteristics, test information and notification source for infectious syphilis notifications, by sex in South Australia, 2019**

	Female	Male	Total
<b>Number of notifications</b>	<b>26</b>	<b>135</b>	<b>161</b>
<b>Exposure characteristics</b>			
<i>Sexual partners in last 12 months</i>			
Female	0	33	<b>33</b>
Male	23	83	<b>106</b>
Male and female	0	13	<b>13</b>
Transgender	0	1	<b>1</b>
Unknown	3	5	<b>8</b>
<i>Likely location of infection acquisition</i>			
South Australia	20	103	<b>123</b>
Interstate	2	10	<b>12</b>
Overseas	1	10	<b>11</b>
Unknown	3	12	<b>15</b>
<i>Worked as a sex worker in last 12 months</i>			
Yes	1	2	<b>3</b>
No	22	125	<b>147</b>
Unknown	3	8	<b>11</b>
<i>Had sexual activity with a sex worker in last 12 months</i>			
Yes	0	5	<b>5</b>
No	22	123	<b>145</b>
Unknown	4	7	<b>11</b>
<b>Reason for test</b>			
Clinical symptoms	8	63	<b>71</b>
STI screening	8	51	<b>59</b>
Contact of confirmed case	5	9	<b>14</b>
Screening for other purposes	2	8	<b>10</b>
Prison screening	0	3	<b>3</b>
Antenatal screening	2	0	<b>2</b>
Unknown	1	1	<b>2</b>
<b>Notification source</b>			
ASHC	2	57	<b>59</b>
Metropolitan GP	8	34	<b>42</b>
Aboriginal health services	8	5	<b>13</b>
Public hospital	2	9	<b>11</b>
Country GP	3	7	<b>10</b>
O'Brien Street Practice	0	9	<b>9</b>
Prison health service	0	5	<b>5</b>
SHINE SA	0	5	<b>5</b>
Interstate public health unit	3	1	<b>4</b>
Drug and Alcohol Services SA	0	1	<b>1</b>
Other	0	2	<b>2</b>



**Table 12 Staging of infectious syphilis cases for clinical management, South Australia, 2019**

Syphilis staging	Female	Male	Total
Primary	8	47	55
Secondary	3	32	35
Early latent	14	55	69
Early neurosyphilis	0	1	1
Not staged	1	0	1

### Multijurisdictional Syphilis Outbreak

In April 2015, the Multijurisdictional Syphilis Outbreak Working Group was formed by CDNA in response to an ongoing outbreak of syphilis among Indigenous people living largely in remote and rural areas of northern Australia. Summary information on the multijurisdictional outbreak can be found on the Commonwealth Department of Health website:

<http://www.health.gov.au/internet/main/publishing.nsf/Content/ohp-infectious-syphilis-outbreak.htm>.

In November 2016, SA noted an increase in infectious syphilis cases in Aboriginal people in the Western and Eyre, and Far North regions and became part of the multijurisdictional outbreak. An increase in Aboriginal cases in the Adelaide region was noted in 2018, and the region was added to the outbreak.

The outbreak case definition for South Australian cases is:

*'Any person who is newly diagnosed with confirmed or probable infectious syphilis according to the CDNA national surveillance case definition for infectious syphilis and is an Aboriginal or Torres Strait Islander person who resides in the Western and Eyre region and Far North region (from 15 November 2016) or Adelaide region (from 1 February 2018) (Category 1 cases) OR is a sexual contact of a confirmed outbreak case (Category 2 outbreak cases).'*

In 2019, there were 33 South Australian cases that met the outbreak case definition. The cases included 14 females and 19 males, with a median age of 31 years (range 19 to 53 years). In 2019, 10 of the cases (33%) were from the Far North region, 23 (70%) were from the Adelaide region and no cases were notified from the Western and Eyre region.

Metropolitan Adelaide became the focus of the syphilis outbreak in 2019. Notifications in metropolitan Adelaide increased from 14 (36%) cases reported in 2018 to 23 (70%) cases in 2019. Infectious syphilis was diagnosed by specialist Aboriginal health services in 15 cases (45%), GPs in six cases (18%), public hospitals in five cases (15%), prison health services in four cases (12%), and ASHC in three cases (9%).

### Congenital syphilis

There were no cases of congenital syphilis reported in 2019.

## Syphilis (unspecified)

In 2019, there were 148 notifications of non-infectious syphilis<sup>1</sup> (greater than two years' duration or unspecified) in SA, an increase compared to 2018 with 90 cases. The notification rate of unspecified syphilis in 2019 was 8.41 per 100 000 population, an increase compared to the rate in 2018 of 5.16 per 100 000 population. The notification rate in the Aboriginal population rose to 175 per 100 000 in 2019, up from 68 per 100 000 in 2018. Notification rates in the non-Indigenous population remained stable at approximately 4 per 100 000 in 2019 and 2018 (Figure 7).

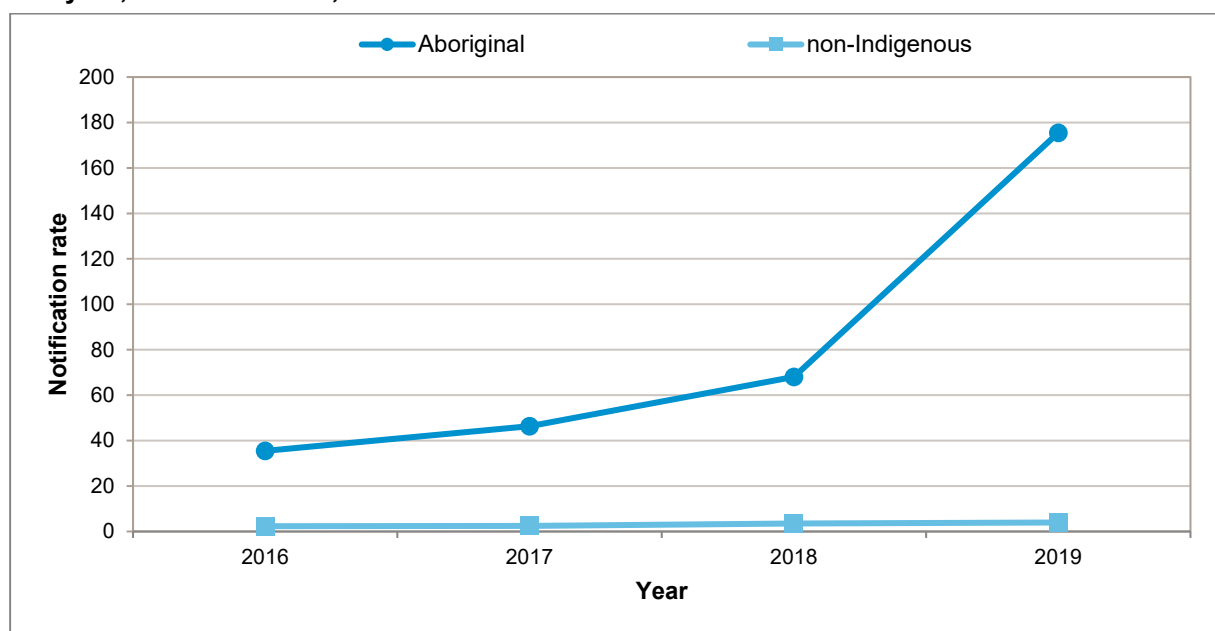
Notifications in 2019 were predominantly in males (87/148; 59%), consistent with 2017 and 2016 (Table 13). The median age of cases in 2019 was 48 years (range 16 to 93 years), a decrease compared to 2018 with a median age of 51 years (range 13 to 91 years). Seventy-nine cases were in people who identified as an Aboriginal or Torres Strait Islander person, with a median age of 49 years (range 16 to 89 years). Aboriginal cases included 20 cases that were resident in metropolitan areas at the time of diagnosis and 57 cases that were resident in rural and remote areas. Non-Indigenous cases were predominantly residents of metropolitan Adelaide at the time of their diagnosis (57/68; 84%).

The majority of cases notified in 2019 were born in the Oceania and Antarctica major region (98/148; 66%), with 96 born in Australia. South-East Asia was the next most common region for country of birth for cases in 2019 (Table 13).

Non-infectious syphilis cases in 2019 were predominantly in people that identified as heterosexual (77/148; 52%) and were most likely to acquire their illness in SA (72/148; 49%) (Table 14). Few cases reported contact with a sex worker in the 12 months prior to their diagnosis (4/148; 3%) and there were two cases that reported working as a sex worker. The most common reason for testing was an STI screen (78/148; 53%), followed by screening for other purposes (37/148; 25%). Cases were most likely to be diagnosed by Aboriginal health services (48/148; 32%), followed by metropolitan GPs (32/148; 22%), and prison health services (17/148; 9%).

The majority of non-infectious syphilis cases in 2019 were staged as late latent (asymptomatic) (147/148; 99%) for clinical management.

**Figure 7 Non-infectious syphilis notification rate per 100 000 population, by Aboriginal status and year, South Australia, 2016 to 2019**



<sup>1</sup> Non-infectious syphilis does not include the case categories of old treated syphilis and other treponemal infections that are monitored under state surveillance, but not nationally notifiable conditions.

**Table 13 Number of notifications of non-infectious syphilis by demographic characteristics, South Australia, 2016 to 2019**

	Year of diagnosis			
	2016	2017	2018	2019
<b>Number of notifications</b>	<b>55</b>	<b>62</b>	<b>90</b>	<b>148</b>
<b>Aboriginal and Torres Strait Islander status</b>				
Aboriginal	15	20	30	79
Non-Indigenous	39	42	60	68
Not stated	1	0	0	1
<b>Sex</b>				
Female	15	11	30	61
Male	40	51	60	87
<b>Age-group (years)</b>				
0-14	0	0	1	0
15-19	0	1	0	2
20-24	2	1	4	7
25-29	5	2	6	11
30-39	17	16	17	20
40-49	7	17	16	41
50-59	8	13	25	32
60+	16	12	21	35
<b>Country of birth (by major region)</b>				
Oceania and Antarctica	25	37	51	98
North-West Europe	4	2	2	2
Southern and Eastern Europe	1	2	0	3
North Africa and the Middle East	4	4	3	5
South-East Asia	7	8	10	10
North-East Asia	4	1	0	4
Southern and Central Asia	5	2	7	5
Americas	3	1	3	4
Sub-Saharan Africa	1	5	7	5
Not reported	1	0	7	12

**Table 14 Exposure characteristics, test information and notification source for non-infectious syphilis, by sex in South Australia, 2019**

	Female	Male	Total
<b>Number of notifications</b>	<b>61</b>	<b>87</b>	<b>148</b>
<b>Exposure characteristics</b>			
<i>Sexual partners in last 12 months</i>			
Female	1	41	42
Male	36	16	52
Male and female	0	1	1
No sexual contact	9	4	13
Unknown	15	25	40
<i>Likely location of infection acquisition</i>			
South Australia	27	45	72
Interstate	2	4	6
Overseas	11	13	24
Unknown	21	25	46
<i>Worked as a sex worker in last 12 months</i>			
Yes	1	1	2
No	40	63	103
Unknown	20	23	43
<i>Had sexual activity with a sex worker in last 12 months</i>			
Yes	0	4	4
No	43	55	98
Unknown	18	28	46
<b>Reason for test</b>			
STI screening	33	45	78
Screening for other purposes	17	20	37
Prison screening	1	11	12
Clinical symptoms	3	6	9
Antenatal screening	4	0	4
Contact of confirmed case	0	1	1
Unknown/missing	3	4	7
<b>Notification source</b>			
Aboriginal health services	24	24	48
Metropolitan GP	20	12	32
Prison health service	1	16	17
Country GP	6	8	14
Public hospital	5	8	13
ASHC	3	8	11
Interstate public health unit	1	2	3
Blood transfusion services	0	2	2
SHINE SA	0	2	2
Drug and Alcohol Services SA	0	1	1
O'Brien Street Practice	0	1	1
Other	1	3	4

## Human immunodeficiency virus

In 2019, there were 50 notifications of human immunodeficiency virus infection (HIV) in SA, an increase compared to 39 cases in 2018, and slightly below the five-year average (2014-2018) of 52.6 cases per year. Figure 8 is a 10-year epidemic curve of HIV in SA by sex demonstrating the consistently higher proportion of males than females reported per year.

The notification rate of HIV in 2019 was 2.84 per 100 000 population, above that of 2.24 per 100 000 population in 2018. The notification rate in the Aboriginal population increased to 4.4 per 100 000 in 2019, compared to 2.3 per 100 000 in 2018 (note changes in rates within the Aboriginal population should be interpreted with caution given the small case numbers per year for the past five years). Notification rates in the non-Indigenous population in 2019 was lower than the Aboriginal population at 2.8 per 100 000 population (Figure 9).

Notifications in 2019 were predominantly in males (38/50; 76%), consistent with previous years. In 2019, the median age of cases was 33 years (range 9 to 81 years), lower than 2018, with a median age of 37 years (range 19 to 74 years). In 2019, two cases identified as Aboriginal people. HIV cases in 2019 were residents of metropolitan Adelaide. The most common region of birth for cases notified in 2019 was the Oceania and Antarctica major region (19/50; 38%), with all 19 cases born in Australia. Sub-Saharan Africa (11/50; 22%), and North Africa and the Middle East (10/50; 20%) were the next most common regions of birth for cases in 2019 (Table 15).

Males diagnosed with HIV in 2019 were more likely to report sexual contact with only males (23/38; 61%) than sexual contact with females (10/38; 26%) or sexual contact with males and females (3/38, 8%). Nine females diagnosed with HIV reported sexual contact with males (75%). The majority of cases were likely exposed to HIV via sexual contact (40/50; 80%) (Table 16). Infections were most commonly acquired overseas in 2019 (34/50; 68%) followed by acquisition in SA (15/50; 30%).

Of the new HIV notifications in 2019, 20 (40%) were previously diagnosed overseas. The most frequently reported testing history for Australian diagnoses were a previous HIV negative test more than 12 months prior to their diagnosis (10; 20%) or no prior testing history (10; 20%). The specialist sexual health service ASHC (13/50; 26%) notified the highest proportion of HIV cases in 2019 followed by metropolitan GPs (12/50; 24%) (Table 16).

In 2019, 68% of male HIV cases (26/38) identified as MSM (including three that reported being bisexual), compared to 63% (20/32) in 2018. Four MSM cases in 2019 also reported IDU as a risk factor for acquisition of HIV. Eleven males identifying as MSM were born in the Oceania and Antarctica major region, all born in Australia (11/26; 42%). North Africa and Middle East (6/26; 23%) was the next most common region for country of birth for MSM cases, followed by the Americas (3/26; 12%) and North West Europe (3/26; 12%). Fourteen MSM cases (54%) reported they acquired their infection overseas, followed by 12 who reported they acquired it in SA (46%). Six MSM cases were previously diagnosed overseas. Information on previous testing for MSM cases included eight cases that had their last negative HIV test less than 12 months before their diagnosis, five were tested more than 12 months before their diagnosis and six were never previously tested.

There were 10 (26%) males diagnosed with HIV in 2019 who identified as heterosexual compared to 11 (34%) cases in 2018. Two heterosexual male cases in 2019 also reported IDU as a risk factor. Of the heterosexual males, five were born in the Oceania and Antarctic major region (all in Australia), four in Sub Saharan Africa, and two in North Africa and Middle East. The majority of these cases reported they acquired their infection overseas (11 cases), and one reported he acquired it in SA. Five cases were previously diagnosed overseas, and three cases each were never tested previously and tested greater than 12 months ago.

In 2019, nine females notified with HIV identified as heterosexual, similar to all female cases in 2018. Two females reported receiving blood products/undergoing medical procedure overseas, and one female each reported congenital transmission, unknown overseas transmission and an overseas partner. Six females were born in Sub-Saharan Africa major regions, three in Oceania and Antarctic, two in North Africa and Middle East, and one in South East Asia. Nine female cases reported acquisition of infection overseas, two cases reported they acquired it in SA, and location of acquisition for one case remained unknown.

The CD4 lymphocyte count is a marker of disease progression and the CD4 lymphocyte count at diagnosis is considered a crude guide to the duration of infection. A CD4 lymphocyte count below 350 cells/mm<sup>3</sup> is indicative of immune suppression and late HIV diagnosis. Where CD4 counts were available in 2019, 13 males and one female (14/50; 28%) had CD4 lymphocyte counts indicative of late diagnosis, with data missing for three males (3/50; 6%). This is compared to 38% (15/39) of newly diagnosed cases in 2018 with CD4 counts indicative of late diagnosis. Seven of the 13 males with CD4 counts below 350 cells/mm<sup>3</sup> at diagnosis were MSM. Of the cases with CD4 counts indicative of late diagnosis, five were born in North Africa and Middle East major region, four in Oceania and Antarctic region, three in Sub-Sahara Africa and one each in North East Asia and Americas.

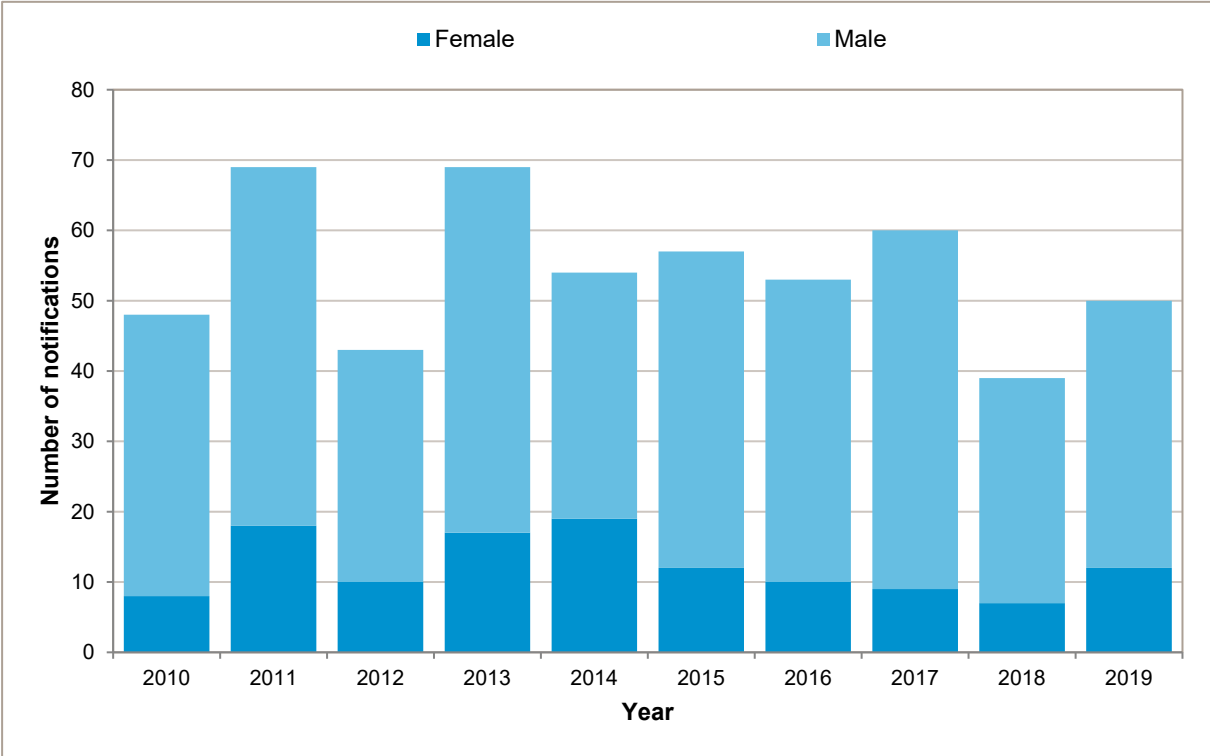
In 2019, gene sequenced subtype data was available for 23 (46%) cases. Due to a change in laboratory methods during 2018, only one gene, the protease gene, was subtyped for all cases with subtyping available. Subtype B was the main circulating strain in SA in 2019 with 13 of the 23 cases with typing (57%) typed as this strain, 11 of whom reported they acquired the infection in SA. Subtype B is consistently the most common subtype in SA, including 17 of 26 (65%) typed cases in 2018 and 27 of 42 cases in 2017 (64%). Subtype C was the next most commonly identified strain with five cases (22%), with all cases acquiring infection overseas. No strain data was available for three locally acquired cases and 24 overseas acquired cases at the time of reporting (Table 17).

Subtype B was also most commonly reported in those who reported MSM (11/26; 42%) including one case who had sex with both males and females. Subtype C was reported in four males, with two males reporting sexual contact with females, one male reported having sex with both males and females, and one male where the sex of partners was not available. Only one female had this subtype, who reported sex with men (Table 18).

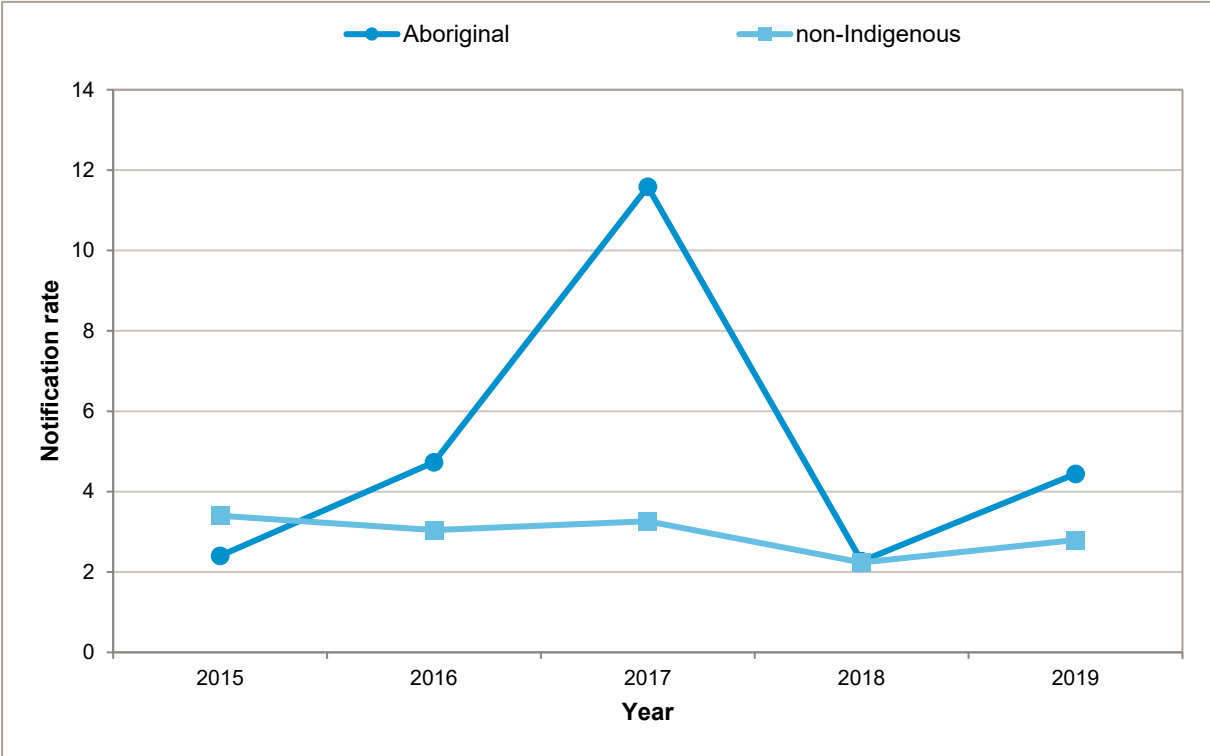
Resistance mutations were identified in five HIV cases notified in 2019. The majority of cases were identified with K103N resistance (two cases); with one infection acquired in SA and one overseas. There were one case each of K101E and K103S acquired in SA, and one case of V106M acquired overseas (Table 19).

For information on resistance genes and implications for treatment, please see the Stanford HIV Drug Resistance Database <https://hivdb.stanford.edu/>.

**Figure 8 Number of new notifications of HIV in South Australia by sex, 2010 to 2019**



**Figure 9 HIV notification rate per 100 000 population by Aboriginal status, South Australia, 2015 to 2019**



**Table 15 Number of notifications of HIV by demographic characteristics, South Australia, 2015 to 2019**

	Year of diagnosis				
	2015	2016	2017	2018	2019
<b>Number of notifications</b>	<b>57</b>	<b>53</b>	<b>60</b>	<b>39</b>	<b>50</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	3	2	5	1	2
Non-Indigenous	54	51	55	38	48
Not stated	0	0	0	0	0
<b>Sex</b>					
Female	12	10	9	7	12
Male	45	43	51	32	38
<b>Age-group (years)</b>					
0-14	0	0	0	0	1
15-19	4	2	0	1	1
20-24	9	6	8	5	3
25-29	6	9	7	4	12
30-39	16	18	24	12	16
40-49	14	7	15	8	8
50-59	4	7	5	6	7
60+	4	4	1	3	2
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	29	26	34	17	19
North-West Europe	5	1	2	5	3
Southern and Eastern Europe	0	2	1	1	0
North Africa and the Middle East	9	10	10	3	10
South-East Asia	3	1	8	4	2
North-East Asia	0	4	0	3	2
Southern and Central Asia	1	1	0	0	0
Americas	1	3	2	1	3
Sub-Saharan Africa	8	5	2	4	11
Not reported	1	0	1	1	0



**Table 16 Exposure characteristics, test information and notification source for HIV, South Australia, 2019**

	Female	Male	Total
<b>Number of notifications</b>	<b>12</b>	<b>38</b>	<b>50</b>
<b>Exposure characteristics</b>			
<i>Sexual partners in last 12 months</i>			
Female	0	10	10
Male	9	23	32
Male and female	0	3	3
Not Applicable	2	1	3
Unknown	1	1	2
<i>Likely location of infection acquisition</i>			
South Australia	2	13	15
Interstate	0	0	0
Overseas	9	25	34
Unknown	1	0	1
<i>HIV exposure category</i>			
Sexual contact	8	28	36
Sexual contact and IDU	0	4	4
Injecting drug use	0	2	2
Other	3	4	7
Unknown	1	0	1
<b>HIV testing history</b>			
No prior test	1	9	10
Test < 12 months prior to diagnosis	0	8	8
Test > 12 months prior to diagnosis	2	8	10
Previously diagnosed HIV positive overseas	8	12	20
Not stated/unknown	1	1	2
<b>Notification source</b>			
ASHC	1	12	13
Metropolitan GP	4	8	12
Public hospital	2	6	8
Migrant health services	4	3	7
Country GP	0	4	4
O' Brien Street Practice	1	0	1
SHINE SA	0	1	1
Other	0	4	4

**Table 17 HIV-1 protease genes sequenced for subtypes by location of infection, South Australia, 2019**

Protease gene	Location acquired			Total
	South Australia	Overseas	Unknown	
A	1	1	0	2
B	11	2	0	13
C	0	5	0	5
CRF01_AE	0	2	0	2
CRF02_AG	0	0	1	1
No data	3	24	0	27

**Table 18 HIV-1 genes sequenced for subtypes by sex and sexual contacts, South Australia, 2019**

Protease gene	Male: sexual contacts				Female: sexual contacts			Total
	Females	Males	Males & females	Not stated/ NA	Males	Not stated	NA	
A	0	1	0	0	1	0	0	2
B	1	10	1	0	1	0	0	13
C	2	0	1	1	1	0	0	5
CRF01_AE	1	1	0	0	0	0	0	2
CRF02_AG	0	0	0	0	1	0	0	1
No data	6	11	1	1	5	1	2	27

NA=not applicable

**Table 19 HIV-1 drug resistant mutations at the time of diagnosis, South Australia, 2019**

Resistance mutations	South Australia	Overseas	Total
K101E	1	0	1
K103N	1	1	2
K103S	1	0	1
V106M	0	1	1
<b>Total</b>	<b>3</b>	<b>2</b>	<b>5</b>

### Hepatitis B (newly acquired)

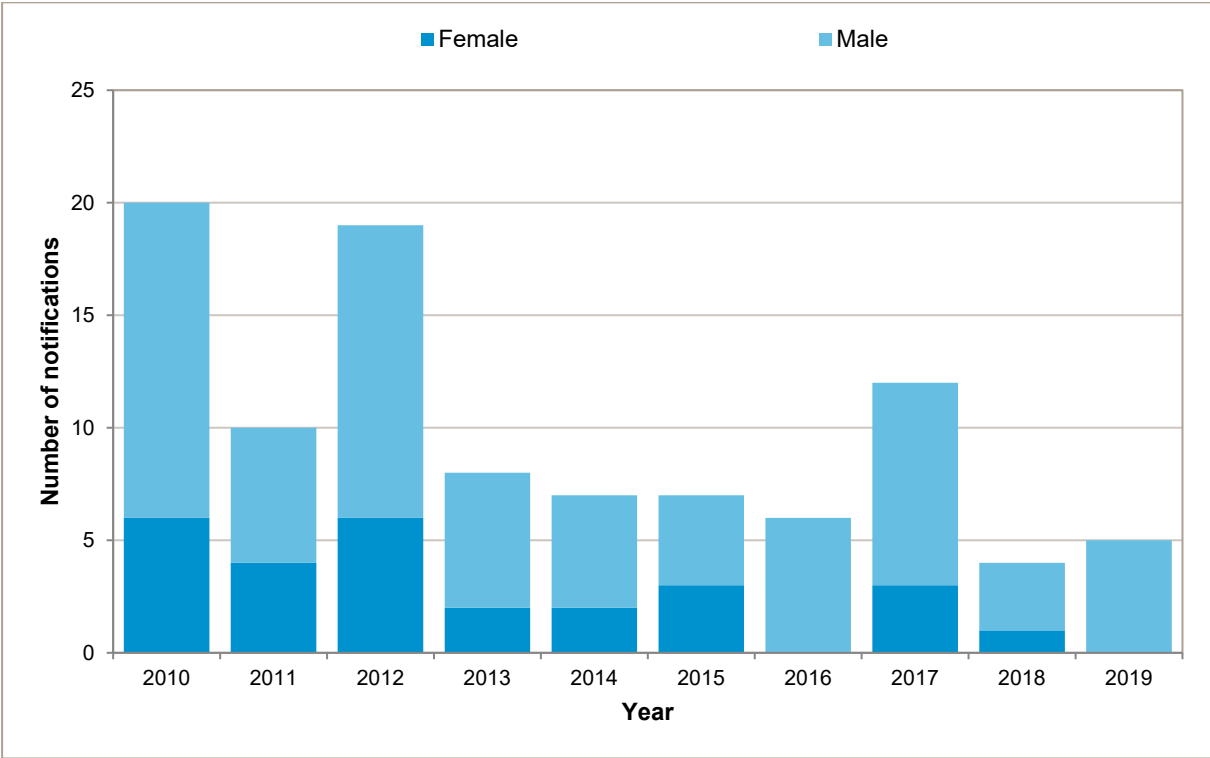
There were five notifications of newly acquired hepatitis B (HBV) infection in SA in 2019 (Figure 10). The corresponding notification rate was 0.28 per 100 000 population in 2019 compared to 0.23 per 100 000 in 2018. The five-year average of acute hepatitis B notifications (2014-2018) was seven cases. There were no notifications among members of the Aboriginal population, consistent with low numbers as in previous years (Table 20). All the five cases in 2019 were males. The median age of cases in 2019 was 43 years (range 26 to 63 years). Two cases in 2019 were born in Australia, in the Oceania and Antarctica major region, one in North-West Europe, and one in the South-East Asia region.

Public health investigations were conducted with all five cases and close contacts. Two cases presented to medical care with clinical signs and symptoms of acute hepatitis, two cases were identified through BBV screening, and one case was a contact of a confirmed HBV case.

In 2019, the risk markers associated with the infections were acupuncture, unspecified needle-stick injury, IDU, tattoos or having a household member with HBV. Other risk markers are listed in Table 26 by sex, noting that individual cases may have reported more than one risk exposure category and that exposure does not necessarily imply the source of infection. Three infections were acquired overseas in South East Asia. Two cases were diagnosed by metropolitan GPs and three cases by public hospitals (Table 21).

In 2019, all new notifications of acute hepatitis B were referred to a specialist gastroenterologist, hepatologist, infectious diseases physician or viral hepatitis support nurse for assessment and provision of guideline-based care.

**Figure 10 Number of notifications of newly acquired hepatitis B infection in South Australia by sex, 2010 to 2019**



**Table 20 Number of notifications of newly acquired hepatitis B by demographic characteristics, South Australia, 2015 to 2019**

	Year of diagnosis				
	2015	2016	2017	2018	2019
<b>Number of notifications</b>	<b>7</b>	<b>6</b>	<b>12</b>	<b>4</b>	<b>5</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	2	0	0	0	0
Non-Indigenous	5	6	12	4	5
Not stated	0	0	0	0	0
<b>Sex</b>					
Female	3	0	3	1	0
Male	4	6	9	3	5
<b>Age-group (years)</b>					
0-14	0	1	0	1	0
15-19	2	0	0	0	0
20-24	1	0	0	0	0
25-29	0	0	1	0	1
30-39	2	1	3	1	0
40-49	2	1	2	1	2
50-59	0	2	1	1	1
60+	0	1	5	0	1
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	5	3	6	1	2
North-West Europe	1	2	3	0	1
Southern and Eastern Europe	0	0	2	0	0
North Africa and the Middle East	0	0	0	0	0
South-East Asia	0	1	0	0	1
North-East Asia	0	0	1	0	0
Southern and Central Asia	1	0	0	2	0
Americas	0	0	0	0	0
Sub-Saharan Africa	0	0	0	0	0
Not reported	0	0	0	1	1

**Table 21 Exposure characteristics, test information and notification source of people diagnosed with newly acquired hepatitis B infection, by sex in South Australia, 2019**

	Female	Male	Total
<b>Number of notifications</b>	<b>0</b>	<b>5</b>	<b>5</b>
<b>Exposure characteristics</b>			
<i>Sexual partners in last 24 months</i>			
Female	0	5	<b>5</b>
Male	0	0	<b>0</b>
No sexual contact	0	0	<b>0</b>
<i>Risk markers*</i>			
Overseas acquired	0	3	<b>3</b>
Injecting drug use	0	2	<b>2</b>
Tattoos	0	2	<b>2</b>
Unspecified needle-stick/biohazard injury	0	2	<b>2</b>
Acupuncture	0	1	<b>1</b>
Household contact with HBV	0	1	<b>1</b>
<b>Reason for test</b>			
BBV Screening	0	2	<b>2</b>
Investigation of symptomatic hepatitis	0	2	<b>2</b>
Contact of a case	0	1	<b>1</b>
<b>Notification source</b>			
Public Hospital	0	3	<b>3</b>
Metropolitan GP	0	2	<b>2</b>

\*Note: More than one risk marker may be recorded per case.

## Hepatitis B (unspecified)

There were 281 notifications of hepatitis B (HBV) infections of unspecified duration in SA in 2019 (Figure 11) compared to 278 cases in 2018. The five-year average is 314 cases per year (2014-2018)<sup>ii</sup>. In 2019, 47% (131/281) cases were reported in females and 53% (150/281) cases were reported in males (Table 22). Five notifications were among members of the Aboriginal population, who were all residents of rural regions of SA. In 2019, 78% of cases were over 30 years of age, consistent with previous years. The median age of non-Indigenous cases was 38 years (range 7 to 95 years) and for Aboriginal cases was 42 years (range 20 to 53 years). The most frequently reported major region for the country of birth of cases notified in 2019 were North East Asia (85/281; 30%) followed by South East Asia (81/281; 29%). Thirty-four (12%) cases in 2019 were born in the major region Oceania and Antarctica, an increase compared to twenty-five cases (9%) in 2018. Twenty cases of unspecified HBV were born in Australia in 2019.

The notification rate for all unspecified hepatitis B cases in 2019 was 16 per 100 000 population. The notification rate in the Aboriginal population in 2019 was 11.1 per 100 000 population, below that of the non-Indigenous population at 16.1 per 100 000, and a decrease over time since 2015 (Figure 12). The rate in the non-Indigenous population has shown a decline over the previous five years.

In 2019, 241 cases (86%) were reported as being acquired overseas, and 23 cases (8%) did not have a location of acquisition recorded. Only eight cases (3%) were reported as locally acquired in SA. A wide range of risk markers were reported by unspecified HBV cases in 2019, noting that individual cases commonly reported more than one risk marker, and reporting a generic risk marker does not necessarily indicate that was the cause of their illness (Table 23). Some common risk markers were perinatal transmission (65/281; 23%) and household contact with a known case of HBV (44/281; 16%), this was consistent with 2018.

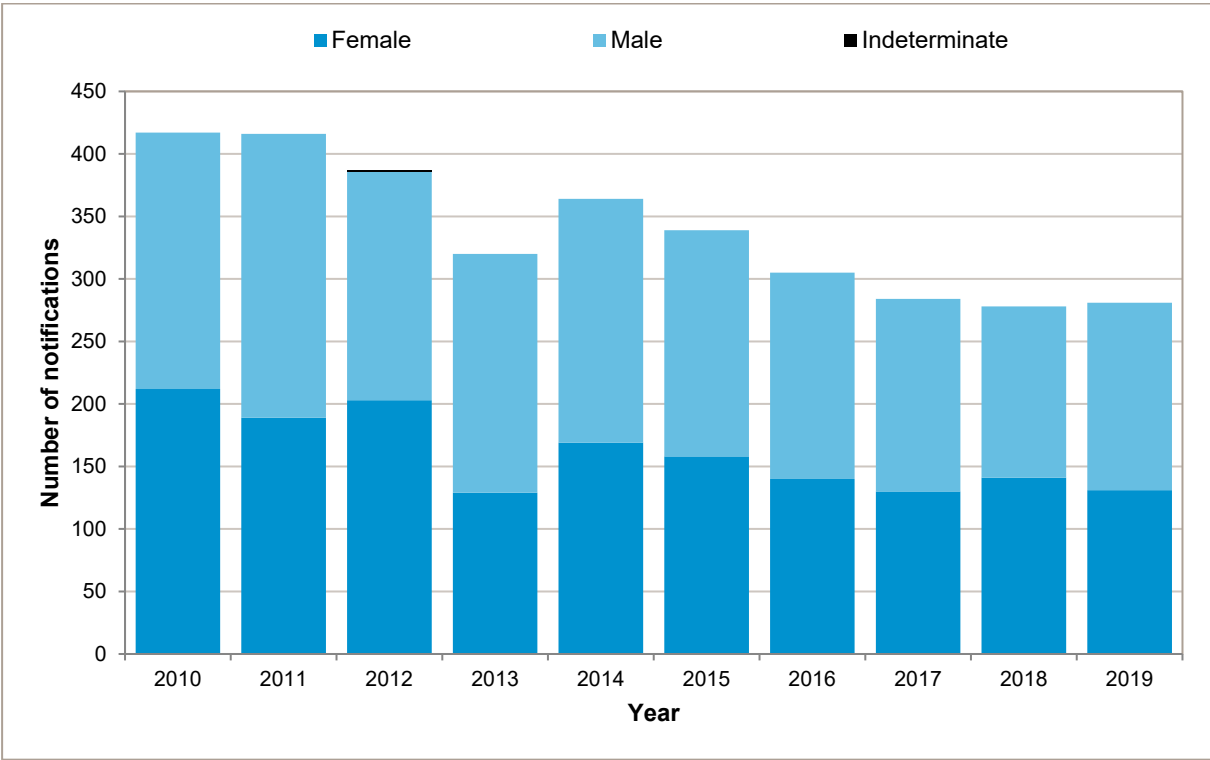
The most common reasons for HBV testing amongst unspecified HBV cases in 2019 was BBV screening (82/281; 29%), followed by migrant screening (45/281; 16%), and antenatal screening (29/281; 10%). Of the 241 cases acquired overseas, 113 cases had no identifiable risk factors other than being born in a country with endemic HBV infection. Cases were most commonly notified by metropolitan GPs (161/281; 57%), public hospitals (40/281; 14%) and migrant health services (35/281; 12%) (Table 24).

In 2019, all new notifications of unspecified hepatitis B were referred to a specialist gastroenterologist, hepatologist, infectious diseases physician or viral hepatitis support nurse for assessment and provision of guideline-based care.

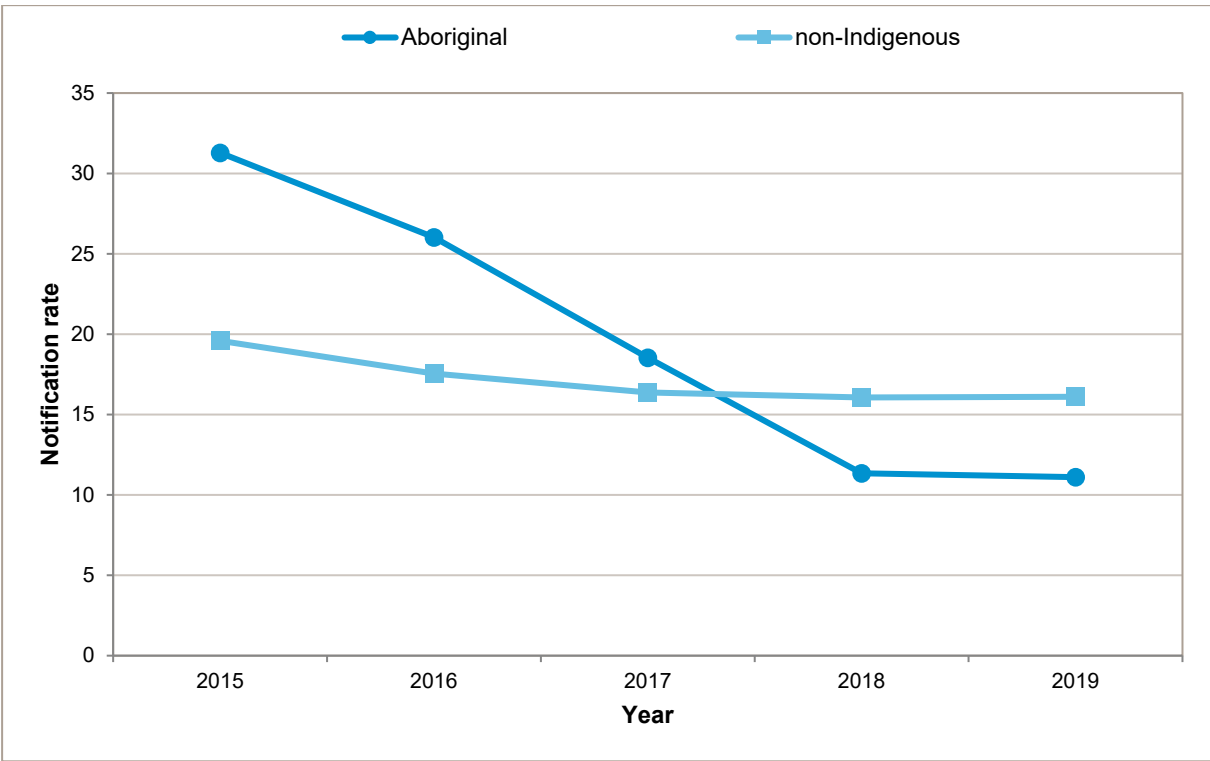
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<sup>ii</sup> Note: Hepatitis B surveillance data was transferred to a new database in late 2018. In the process, the unspecified hepatitis B data now includes historical categories not previously reported on. This accounts for an increase in historical case numbers compared to previous annual reports. The current data is a better estimate of the disease burden in the community compared to previous reports.

**Figure 11** Number of notifications of unspecified hepatitis B infection in South Australia by sex, 2010 to 2019



**Figure 12** Unspecified hepatitis B notification rate per 100 000 population, by Aboriginal status, South Australia, 2015 to 2019



**Table 22 Number of notifications of unspecified hepatitis B by demographic characteristics, South Australia, 2015 to 2019**

	Year of diagnosis				
	2015	2016	2017	2018	2019
<b>Number of notifications</b>	<b>339</b>	<b>305</b>	<b>284</b>	<b>278</b>	<b>281</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	13	11	8	5	5
Non-Indigenous	325	294	276	267	271
Not stated	1	0	0	6	5
<b>Sex</b>					
Female	158	140	130	141	131
Male	181	165	154	137	150
<b>Age-group (years)</b>					
0-14	2	10	4	4	3
15-19	12	18	10	14	5
20-24	27	23	25	31	16
25-29	58	33	38	28	39
30-39	101	100	87	77	88
40-49	60	67	49	55	50
50-59	42	26	28	33	37
60+	37	28	43	36	43
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	38	32	19	25	34
North-West Europe	4	0	2	1	2
Southern and Eastern Europe	19	14	9	7	6
North Africa and the Middle East	17	20	12	9	2
South-East Asia	105	94	94	105	81
North-East Asia	95	82	84	77	85
Southern and Central Asia	33	30	29	21	28
Americas	3	0	1	0	1
Sub-Saharan Africa	20	25	25	19	27
Not reported	5	8	9	14	15



**Table 23 Exposure characteristics and test information of people diagnosed with unspecified hepatitis B, by sex in South Australia, 2019**

	Female	Male	Total
<b>Number of notifications</b>	<b>131</b>	<b>150</b>	<b>281</b>
<b>Exposure characteristics</b>			
<i>Sexual partners in last 24 months</i>			
Female	3	90	<b>93</b>
Male	86	7	<b>93</b>
Male and female	1	2	<b>3</b>
No sexual contact	9	8	<b>17</b>
Unknown	32	43	<b>75</b>
<i>Location of acquisition</i>			
South Australia	4	4	<b>8</b>
Interstate	0	4	<b>4</b>
Overseas	118	123	<b>241</b>
Unknown	8	15	<b>23</b>
<i>Risk markers*</i>			
Perinatal	31	34	<b>65</b>
Household contact (known HBV)	19	25	<b>44</b>
Ear/body piercing	19	8	<b>27</b>
Tattooing	3	14	<b>17</b>
Sexual partner of opposite sex (known HBV)	2	6	<b>8</b>
Injecting drug use	0	7	<b>7</b>
Imprisonment	1	5	<b>6</b>
Acupuncture	4	1	<b>5</b>
Blood/blood products/tissues overseas	3	0	<b>3</b>
Blood/blood products/tissues Australia	0	1	<b>1</b>
Non-occupational or unspecified injury	1	0	<b>1</b>
Sexual partner of same sex (known HBV)	0	1	<b>1</b>
Other	4	2	<b>6</b>
Risk not able to be determined	2	5	<b>7</b>
<b>Reason for test</b>			
BBV screen	31	51	<b>82</b>
Migrant screen	18	27	<b>45</b>
Antenatal screen	27	2	<b>29</b>
STI screen	7	10	<b>17</b>
Patient request	7	7	<b>14</b>
Abnormal liver function tests	5	8	<b>13</b>
Contact of a known case	4	1	<b>5</b>
Occupational screen	3	2	<b>5</b>
Blood or organ donor screen	1	3	<b>4</b>
Perioperative	1	3	<b>4</b>
Investigation of symptomatic hepatitis	0	3	<b>3</b>
Prison screen	0	1	<b>1</b>
Other	15	18	<b>33</b>
Unknown (not recorded)	12	14	<b>26</b>

\*Note: More than one risk marker may be recorded per case.

**Table 24 Notification source of people diagnosed with unspecified HBV, by sex  
South Australia, 2019**

Notification source	Female	Male	Total
Metropolitan GP	83	78	<b>161</b>
Public hospital	19	21	<b>40</b>
Migrant health services	9	26	<b>35</b>
Country GP	12	6	<b>18</b>
Aboriginal health services	1	4	<b>5</b>
ASHC	1	3	<b>4</b>
Private hospital	0	3	<b>3</b>
SHINE SA	0	2	<b>2</b>
Blood transfusion service	1	0	<b>1</b>
Prison health service	0	1	<b>1</b>
Other	4	5	<b>9</b>
Unknown	1	1	<b>2</b>

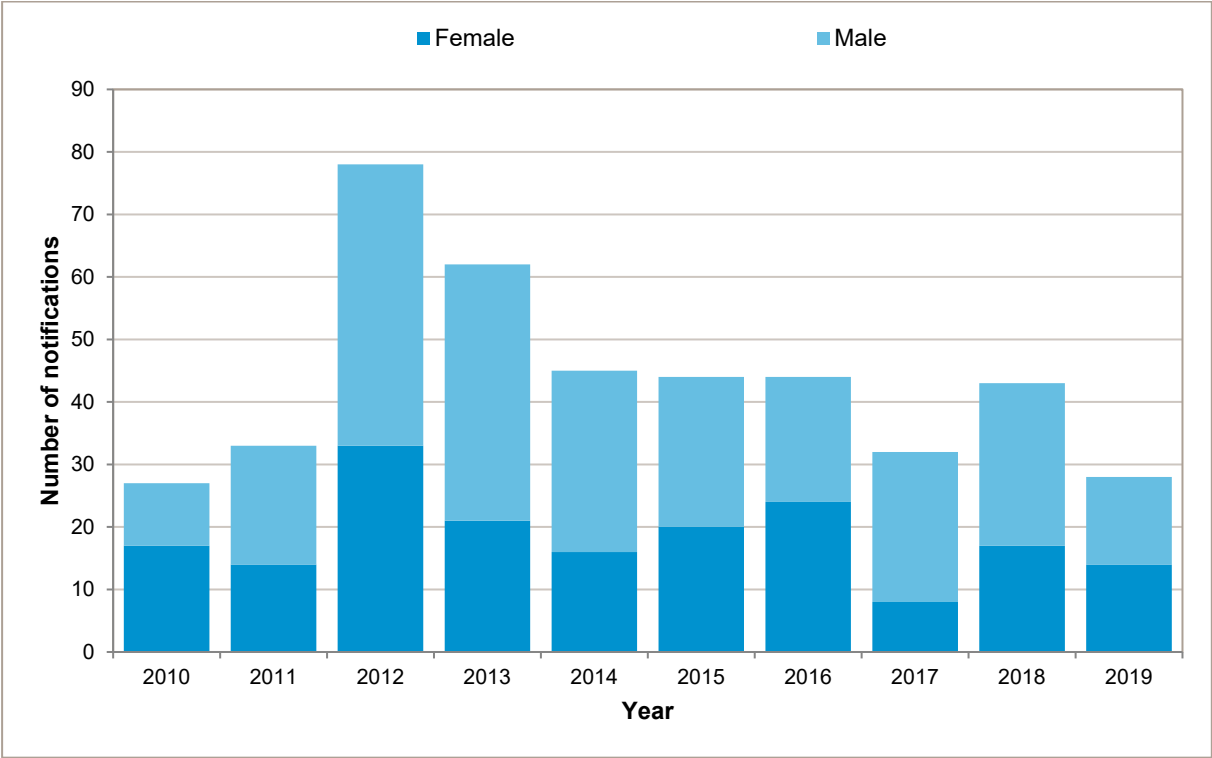
## Hepatitis C (newly acquired)

There were 28 notifications of newly acquired hepatitis C (HCV) infections in SA in 2019, a decrease compared to the five year average (2014-2018) of 42 notifications (Figure 13). The corresponding notification rate was 1.6 per 100 000 population, a decrease from the rate in 2018 of 2.5 per 100 000 population. Ten notifications were in people identifying as Aboriginal people with a corresponding rate of 22.2 per 100 000 in 2019, compared to a rate of 1 per 100 000 population in non-Indigenous cases. Six of the notifications in Aboriginal people were residents of metropolitan Adelaide at the time of diagnosis. Figure 14 demonstrates the higher notification rates in the Aboriginal population compared to the non-Indigenous population from 2015 to 2019 but noting small case numbers per year can result in large notification rate changes. The median age of all cases in 2019 was 36.5 years (range 0-53 years) compared to a median of 32 years in 2018. The median age of Aboriginal cases was 29 years (range 19-45 years) compared to 40 years (range 0 to 53 years) in the non-Indigenous cases. In 2019, notifications were equally divided between males (14/28) and females (14/28), and 75% (21/28) were among people aged 30 years and over (Table 25). In 2019, there was one case diagnosed in a 6-month-old child, attributed to perinatal transmission. The child's parents were HCV positive and the child was born in a refugee camp overseas where the mother did not receive prenatal care. Consistent with previous years, the majority of cases (25/28; 89%) were born in the major region of Oceania and Antarctica, all of whom were born in Australia.

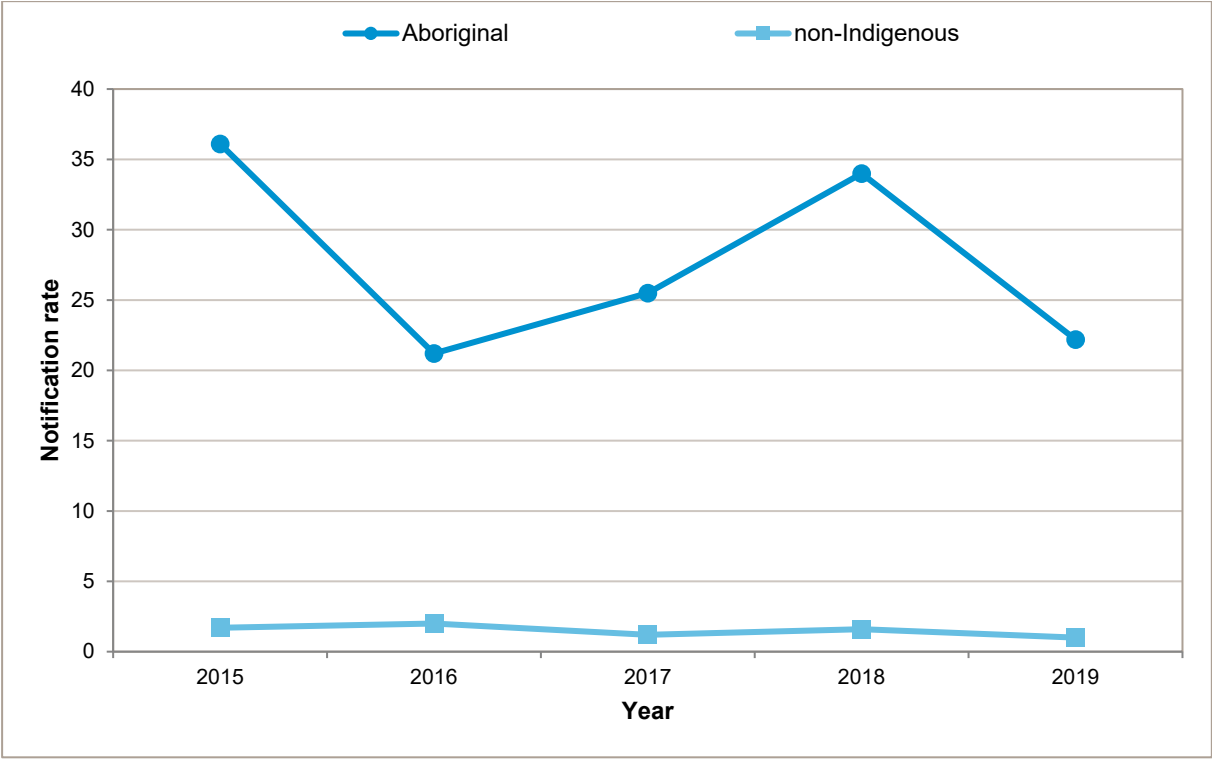
Attempts were made to interview all twenty-eight cases in 2019. Several factors influenced the number and quality of interviews including change of address, chaotic lifestyles, medical co-morbidities and an unwillingness to participate in the interview process. In 2019, the most commonly reported risk marker was injecting drug use (IDU) within the previous two years, reported by 21 of the 28 cases (75%) (Table 26). This is slightly higher than the 73% of cases reporting IDU in 2018. Six cases reported never injecting drugs, and information was unknown for one case in 2019. Other common risk markers identified were imprisonment (12/28; 43%), household contact with a person infected with HCV (10/28; 36%), sexual partner of opposite sex with known HCV infection (10/28; 36%), ear or body piercing (9/28; 32%) and non-occupational needlestick or biohazard injuries in non-healthcare workers (8/28; 29%). Other risk markers are listed in Table 26 by sex, noting that individual cases may have reported more than one risk exposure category and that reported exposure does not necessarily imply the source of infection. The most common reasons for HCV testing were reported as STI/BBV screening (8/28; 29%), prison screening (7/28; 25%), abnormal liver function tests (4/28; 14%) and antenatal screening (3/28; 11%). Metropolitan GPs were the most common notifying source (8/28; 29%) followed by prison health services (7/28; 25%) and public hospitals (6/28; 21%).

In 2019, all new notifications of newly acquired hepatitis C were referred to a specialist gastroenterologist, hepatologist, infectious diseases physician or viral hepatitis support nurse for assessment and provision of guideline-based care.

**Figure 13** Number of notifications of newly acquired hepatitis C in South Australia by sex, 2010 to 2019



**Figure 14** Newly acquired hepatitis C notification rate per 100 000 population, by Aboriginal status, South Australia, 2015 to 2019



**Table 25 Number of notifications of newly acquired hepatitis C by demographic characteristics, South Australia, 2015 to 2019**

	Year of diagnosis				
	2015	2016	2017	2018	2019
<b>Number of notifications</b>	<b>44</b>	<b>44</b>	<b>32</b>	<b>43</b>	<b>28</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	15	9	11	15	10
Non-Indigenous	29	35	21	28	17
Not stated	0	0	0	0	1
<b>Sex</b>					
Female	20	24	8	17	14
Male	24	20	24	26	14
<b>Age-group (years)</b>					
0-14	0	0	0	1	1
15-19	1	2	0	2	1
20-24	8	8	1	4	1
25-29	7	4	6	8	4
30-39	15	8	11	17	10
40-49	10	13	11	9	9
50-59	3	9	3	1	2
60+	0	0	0	1	0
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	42	42	30	39	25
North-West Europe	1	0	0	1	1
Southern and Eastern Europe	0	0	0	0	0
North Africa and the Middle East	0	0	0	0	0
South-East Asia	0	1	0	0	0
North-East Asia	0	0	0	0	0
Southern and Central Asia	0	0	0	1	0
Americas	0	0	0	0	0
Sub-Saharan Africa	0	0	0	0	1
Not reported	1	1	2	2	1

**Table 26 Exposure characteristics, test information and notification source of people diagnosed with newly acquired hepatitis C, by sex in South Australia, 2019**

	Female	Male	Total
<b>Number of notifications</b>	<b>14</b>	<b>14</b>	<b>28</b>
<b>Exposure characteristics – risk markers*</b>			
Injecting drug use within previous 2 years	8	13	21
Imprisonment	6	6	12
Household contact (known HCV)	7	3	10
Sexual partner of opposite sex (known HCV)	9	1	10
Ear/body piercing	6	3	9
Unspecified needle-stick/biohazard injury	3	5	8
Tattooing	3	3	6
Perinatal transmission	1	0	1
Sexual partner of same sex (known HCV)	0	1	1
<b>Reason for test</b>			
STI/BBV screening	3	5	8
Prison screening	4	3	7
Abnormal liver function tests	1	3	4
Antenatal screen	3	0	3
Patient request	1	2	3
Drug/alcohol screen	0	1	1
Investigation of symptomatic hepatitis	1	0	1
Migrant health screen	1	0	1
<b>Notification source</b>			
Metropolitan GP	3	5	8
Prison health services	4	3	7
Public hospital	2	4	6
Country GP	3	0	3
Aboriginal health services	1	1	2
Migrant Health Services	1	0	1
Drug and Alcohol Services SA	0	1	1

\*Note More than one risk marker may be recorded per case.

## Hepatitis C (unspecified)

There were 313 notifications of hepatitis C (HCV) infections of unspecified duration in SA in 2019, a decrease compared to the five year average (2014-2018) of 465 infections per year (Figure 15)<sup>iii</sup>. The corresponding notification rate was 17.78 per 100 000 population in 2019, a decrease from the rate of 22.08 per 100 000 population in 2018. Forty-two notifications were among members of the Aboriginal population, 19 (45%) of whom were residents of metropolitan regions of SA, with 22 (52%) from rural regions and one unknown. Figure 16 demonstrates the higher notification rates in the Aboriginal population compared to the non-Indigenous population from 2015 to 2019, with a rate of 93.3 per 100 000 population in the Aboriginal population and 15.4 per 100 000 population in the non-Indigenous population in 2019. In 2019, consistent with previous years, 63% (197/313) of notifications were in males and 87% (271/313) of the notifications were among people aged 30 years and over (Table 27). The majority of cases (211/313; 67%) were born in the major region of Oceania and Antarctica, including 208 that were Australian born. Table 28 outlines the identified risk markers and reasons for testing for unspecified hepatitis C notifications in 2019, by sex. The most commonly reported risk marker was IDU (197/313; 63%), followed by tattoos (82/313; 26%) and imprisonment (76/313; 24%). Multiple other risk exposures are listed in Table 28, noting that people can report more than one risk for their infection. The most common reason for testing was STI/BBV screening (109/313; 35%) followed by abnormal liver function tests (59/313; 19%), and prison screening (38/313; 12%).

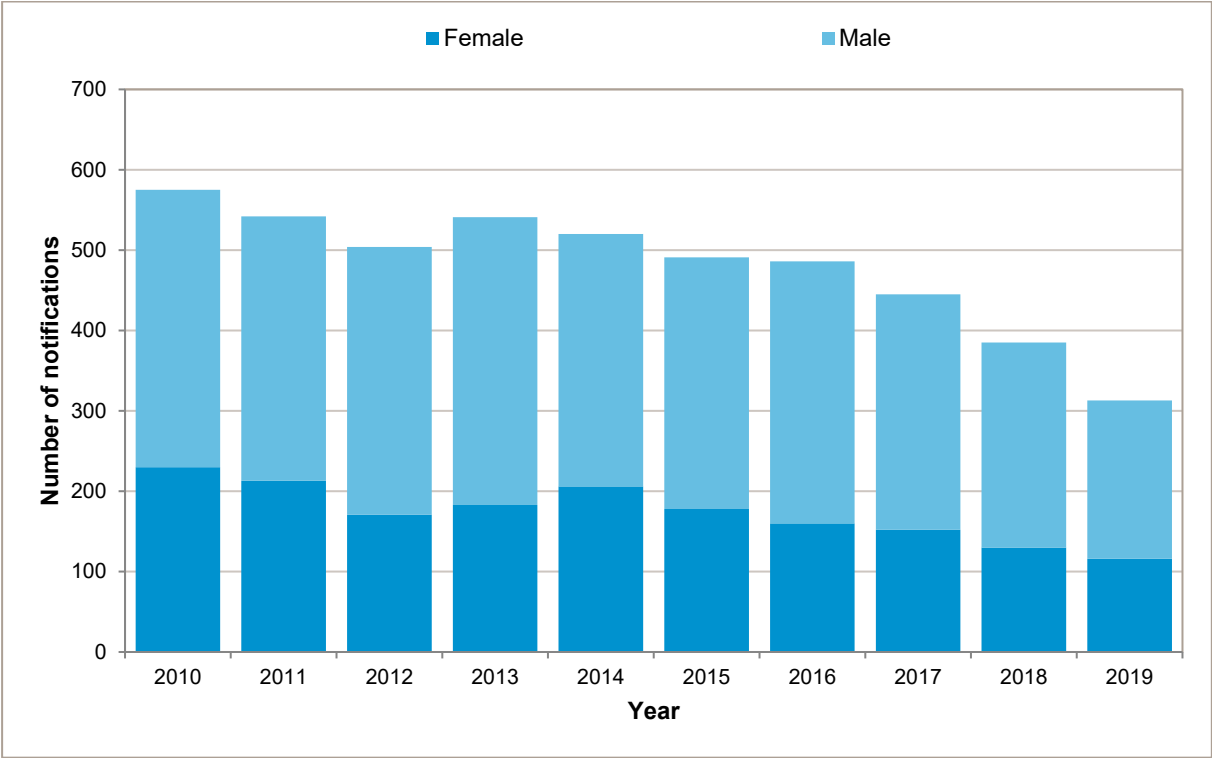
The majority of cases were notified by metropolitan GPs (128/313; 41%) and public hospitals (59/313; 19%), followed by country GPs (40/313; 13%) and prison health services (39/313; 12%) (Table 29).

In 2019, all new notifications of unspecified hepatitis C were referred to a specialist gastroenterologist, hepatologist, infectious diseases physician or viral hepatitis support nurse for assessment and provision of guideline-based care.

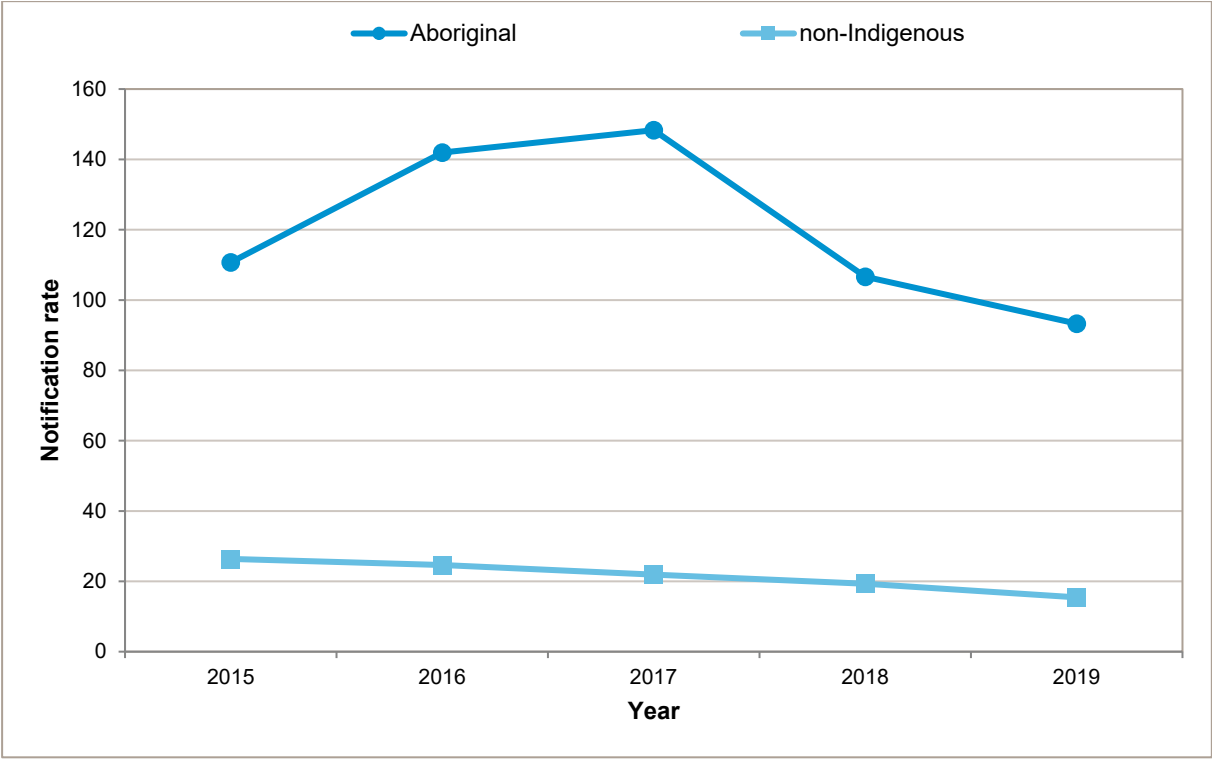
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<sup>iii</sup> Note: Hepatitis C surveillance data was transferred to a new database in early 2019 and data was extracted from the new database for analysis. In the process, the unspecified hepatitis C data now includes historical categories not previously reported on. This accounts for an increase in historical case numbers compared to previous annual reports. The current data is a better estimate of the disease burden in the community compared to previous reports. There was also a change in surveillance practices in 2017 and 2018 to actively remove cases likely to have been diagnosed in other states and territories to reduce over counting of cases within Australia. Additionally, the routine collection of HCV PCR results from private and public laboratories was slowly introduced from April 2018.

**Figure 15** Number of notifications of unspecified hepatitis C in South Australia by sex, 2010 to 2019



**Figure 16** Unspecified hepatitis C notification rate per 100 000 population, by Aboriginal status, South Australia, 2015 to 2019





**Table 27 Number of notifications of unspecified hepatitis C by demographic characteristics, South Australia, 2015 to 2019**

	Year of diagnosis				
	2015	2016	2017	2018	2019
<b>Number of notifications</b>	<b>491</b>	<b>486</b>	<b>445</b>	<b>385</b>	<b>313</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	46	60	64	47	42
Non-Indigenous	439	413	369	328	265
Not stated	6	13	12	10	6
<b>Sex</b>					
Female	178	160	152	130	116
Male	313	326	293	255	197
<b>Age-group (years)</b>					
0-14	1	3	0	0	2
15-19	5	7	4	7	6
20-24	16	22	23	10	18
25-29	37	38	39	21	16
30-39	132	121	110	95	74
40-49	132	117	117	96	74
50-59	125	125	105	98	73
60+	43	53	47	58	50
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	367	336	317	250	211
North-West Europe	12	11	12	19	8
Southern and Eastern Europe	9	14	9	10	7
North Africa and the Middle East	6	9	6	2	3
South-East Asia	21	25	20	21	18
North-East Asia	4	7	1	9	3
Southern and Central Asia	23	12	22	16	23
Americas	3	2	0	0	1
Sub-Saharan Africa	3	6	5	2	6
Not reported	43	64	53	56	33

**Table 28 Exposure characteristics and test information of people diagnosed with unspecified hepatitis C, by sex in South Australia, 2019**

	Female	Male	Total
<b>Number of notifications</b>	<b>116</b>	<b>197</b>	<b>313</b>
<b>Exposure characteristics - risk markers*</b>			
Injecting drug use	60	137	<b>197</b>
Tattoos	19	63	<b>82</b>
Imprisonment	10	66	<b>76</b>
Ear/body piercing	33	25	<b>58</b>
Overseas acquired	24	22	<b>46</b>
Sexual partner of opposite sex (known HCV)	23	22	<b>45</b>
Household contact (known HCV)	13	24	<b>37</b>
Non-occupational/unspecified injury	10	20	<b>30</b>
Acupuncture	14	7	<b>21</b>
Blood/blood products/tissues in Australia	9	3	<b>12</b>
Blood/blood products/tissues from overseas	8	2	<b>10</b>
Unspecified needle-stick/biohazard injury	1	4	<b>5</b>
Health care worker with no exposure	2	2	<b>4</b>
Sexual partner of same sex (known HCV)	0	4	<b>4</b>
Perinatal	2	1	<b>3</b>
Haemodialysis	0	1	<b>1</b>
Risk not able to be determined	6	16	<b>22</b>
<b>Reason for test</b>			
STI/BBV screen	42	67	<b>109</b>
Abnormal liver function tests	24	35	<b>59</b>
Prison screening	4	34	<b>38</b>
Patient request	1	12	<b>13</b>
Antenatal screening	11	1	<b>12</b>
Migrant health screen	6	6	<b>12</b>
Investigation of symptomatic hepatitis	2	6	<b>8</b>
Blood or organ donor screen	1	4	<b>5</b>
Contact of a case	1	3	<b>4</b>
Drug/alcohol screen	1	3	<b>4</b>
Perioperative	1	3	<b>4</b>
Occupational screen	2	1	<b>3</b>
Other	12	13	<b>25</b>
Unknown/not stated	8	9	<b>17</b>

\*Note: More than one risk marker may be recorded per case

**Table 29 Notification source of people diagnosed with unspecified hepatitis C, by sex  
South Australia, 2019**

<b>Notification source</b>	<b>Female</b>	<b>Male</b>	<b>Total</b>
Metropolitan GP	57	71	<b>128</b>
Public hospital	22	37	<b>59</b>
Country GP	13	27	<b>40</b>
Prison health service	5	34	<b>39</b>
Aboriginal health services	4	5	<b>9</b>
Drug and alcohol services	2	7	<b>9</b>
Migrant health services	5	4	<b>9</b>
Blood transfusion service	0	3	<b>3</b>
Mental health service	1	2	<b>3</b>
Interstate public health unit	0	2	<b>2</b>
Private hospital	2	0	<b>2</b>
Sexual health services	0	1	<b>1</b>
Other	3	2	<b>5</b>
Unknown	2	2	<b>4</b>

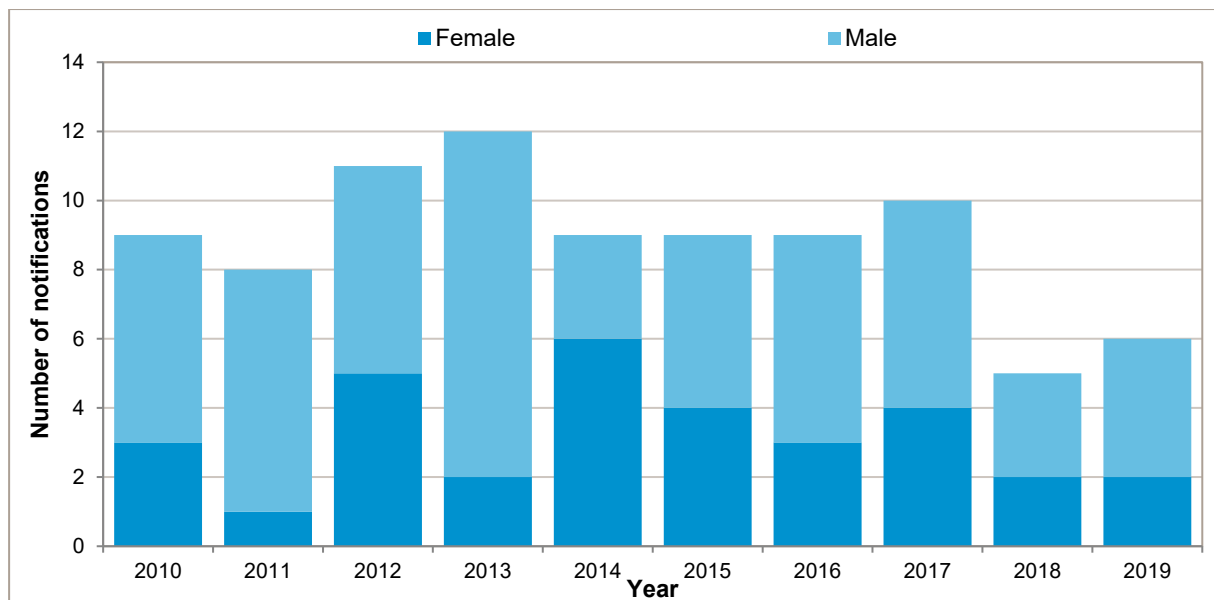
## Hepatitis D

Hepatitis D (HDV) requires the assistance of HBV to replicate therefore the virus is only found in people infected with HBV. HDV can be acquired as either a co-infection with HBV or as a super-infection in persons with chronic HBV. In Australia, notifications of HDV infection remain low.

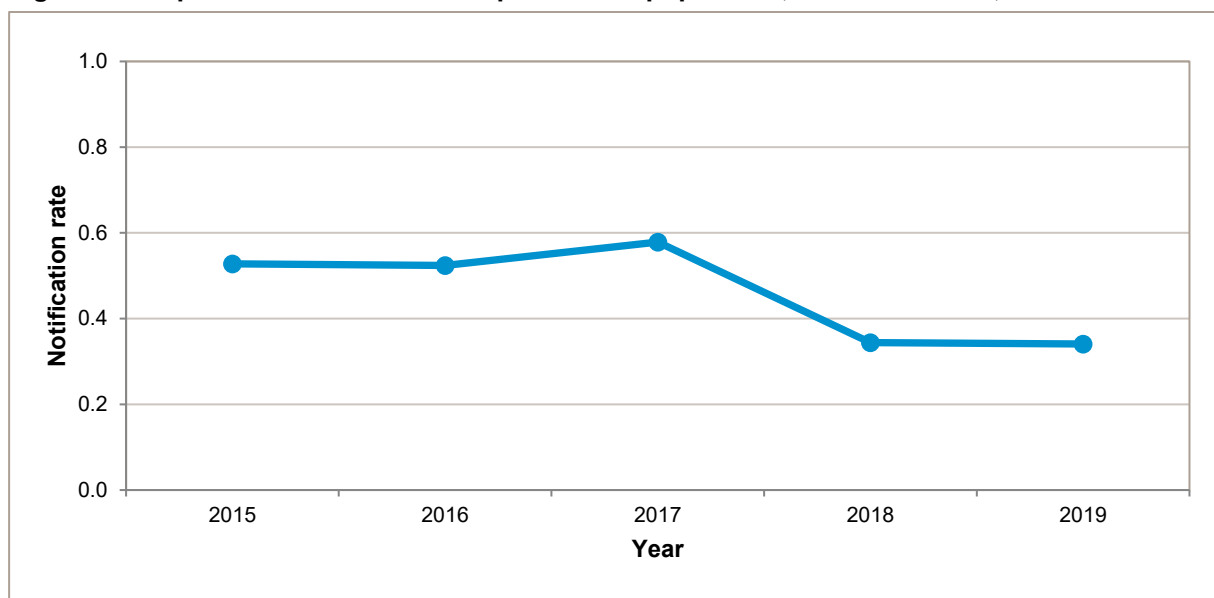
In 2019, there were six new diagnoses of HDV infection notified in SA, below the five-year average (2014-2018) of eight notifications per year. Notifications in 2019 were in four males and two females (Figure 17). The notification rate of HDV in SA was 0.3 per 100 000 population in 2019, consistent with the notification rate in 2018, and lower than the years 2015-2017 (Figure 17).

In 2019, one case identified as Aboriginal and Torres Strait Islander person. Of cases notified in 2019, one was born in the Oceania and Antarctica region, four in regions overseas and the country of birth was not reported for one case (Table 30). The median age of cases notified in 2019 was 51 years (range 25 to 66 years). Notifications came from diagnosing doctors in public hospitals (three cases), metropolitan GPs (two cases) and a migrant health service (one case). All cases had residential addresses in the metropolitan Adelaide region at the time of their diagnosis.

**Figure 17 Number of new notifications of hepatitis D in South Australia by sex, 2010 to 2019**



**Figure 18 Hepatitis D notification rate per 100 000 population, South Australia, 2015 to 2019**



**Table 30 Number of notifications of hepatitis D by demographic characteristics, South Australia, 2015 to 2019**

	Year of diagnosis				
	2015	2016	2017	2018	2019
<b>Number of notifications</b>	<b>9</b>	<b>9</b>	<b>10</b>	<b>6</b>	<b>6</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	0	0	1	0	1
Non-Indigenous	9	9	9	6	5
Not stated	0	0	0	0	0
<b>Sex</b>					
Female	4	3	4	3	2
Male	5	6	6	3	4
<b>Age-group (years)</b>					
0-14	0	0	0	0	0
15-19	1	0	0	1	0
20-24	0	2	2	2	0
25-29	1	0	1	0	1
30-39	4	1	4	2	0
40-49	2	1	2	0	2
50-59	1	3	1	0	2
60+	0	2	0	1	1
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	1	2	1	0	1
North-West Europe	0	0	0	0	0
Southern and Eastern Europe	0	1	0	0	1
North Africa and the Middle East	1	0	3	0	0
South-East Asia	2	2	2	2	2
North-East Asia	0	1	0	0	0
Southern and Central Asia	2	2	2	1	0
Americas	0	0	0	0	0
Sub-Saharan Africa	1	1	2	3	1
Not reported	2	0	0	0	1

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## For more information

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