Epidemiological report 32
ISSN 2201-1994

Surveillance of sexually transmitted infections and blood-borne viruses in South Australia, 2018

Communicable Disease Control Branch
SA Health

Government of South Australia
SA Health

Acknowledgement

The authors would like to acknowledge the following individuals and organisations for their contributions to this report – Adelaide Sexual Health Centre, public and private laboratories, and healthcare professionals working in metropolitan, rural and remote healthcare facilities.

Contributors/editors

E Fearnley, I Tribe, R Waddell, A Solly

Communicable Disease Control Branch
SA Health
PO Box 6
Rundle Mall SA 5000

Telephone: 1300 232 272

Web: www.sahealth.sa.gov.au/SurveillanceNotifiableConditions

Disclaimer

The information presented in this report is based on laboratory and medical notifications received and investigated since 2008. 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.

Contents

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	*Chlamydia trachomatis*
GP	General practitioners
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 main findings in this epidemiological report are presented as text, tables and figures. All data contained in this report are to the end of 2018, as reported at June 2019. These data are considered provisional and subject to revision as additional information becomes available.

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 utilises a dual notification strategy where the laboratory and the diagnosing medical practitioner 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 2016 Census data published by the Australian Bureau of Statistics (ABS) (3101.0 Australian Demographic Statistics, updated September 2018). 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, 2001 to 2026). In 2018, 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 (1269.0 Second Edition, May 2008) 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.

Main findings

In 2018, there were 8,556 new notifications of STI and BBV in South Australia (Table 1). This figure represents a 3% increase in the number of new notifications compared to notifications received in 2017 (n=8,276).

In 2018, there were 6,256 notifications of *Chlamydia trachomatis* (chlamydia) making this the most commonly notified STI in South Australia. The notification rate of chlamydia in 2018 was 360 per 100,000 population, and has been stable over the past five years. In 2018, the notification rate in the Aboriginal population increased to 1,039 per 100,000 population compared to 834 per 100,000 population in 2017. The demographics of people diagnosed with chlamydia have remained relatively stable over the past five years. In 2018, 56% of people diagnosed with chlamydia were females and 77% of all cases were aged less than 30 years. The majority of cases were born in Australia (70%).

There were no notifications of donovanosis in 2018.

There were 1,288 notifications of gonorrhoea in 2018. The notification rate of gonorrhoea increased from 45 per 100,000 population in 2014 to 74 per 100,000 population in 2017 and 2018. The rate in the Aboriginal population was 813 per 100,000 population in 2018 compared to 55 per 100,000 population in the non-Indigenous population. There were more infections in males (65%) than females. Males diagnosed with gonorrhoea in 2018 were almost as likely to report sexual contact with males (41%) as with females (48%), whereas females were most likely to report sexual contact with males (88%). The majority of cases were Australian born (84%).

There were 203 notifications of infectious syphilis in 2018, the highest number of annual notifications in the past 10 years. The notification rate of infectious syphilis in 2018 was 11.7 per 100,000 population, more than double the rate in 2016 of 5.2 per 100,000 population. In 2018, 88% of notifications were in males, the majority being among men who have sex with men (MSM) (75%). All female cases reported sexual contact with males. Infectious syphilis remains high in the Aboriginal population with the ongoing multijurisdictional outbreak expanding to include the Adelaide region in 2018, in addition to the Far North, and Western and Eyre regions. Infectious syphilis notifications in the Aboriginal population rose to 90 per 100,000 in 2018, compared to 68 per 100,000 in 2017. As part of the response to the multijurisdictional outbreak of syphilis, SA Health is setting up a Syphilis Register, starting with all South Australian Aboriginal and Torres Strait Islander cases.

There were no notifications of congenital syphilis in 2018.

There were 81 notifications of unspecified (non-infectious) syphilis in 2018. The notification rate was 4.7 per 100,000 population compared to 3.7 per 100,000 in 2017. Cases were predominantly in males (67%), and the majority of cases were aged over 30 years (86%). Rates were higher in the Aboriginal population at 57 per 100,000 population compared to 3 per 100,000 in the non-Indigenous population.

There were 39 new diagnoses of human immunodeficiency virus (HIV) infection in 2018. The notification rate of newly diagnosed HIV infection in 2018 was 2.3 per 100,000 population, below that in each of the previous four years (≥3 per 100,000 population). The notification rate in the Aboriginal population fell to 2.3 per 100,000 in 2018, down from 11.8 per 100,000 in 2017 (noting the small number of cases in the Aboriginal population lead to unstable rates). Thirty-two of the 39 notifications were in males (82%). In 2018, 63% of male cases reported male-to-male sex. Thirteen of these males reported acquiring their infection in South Australia. Six of the seven females notified in 2018 reported sexual contact with males only and one reported sexual contact with both males and females. Six females acquired their infection overseas and one in South Australia. Seven males and one female (8/39; 21%) reported sexual contact and injecting drug use (IDU) as potential exposures for their HIV infection. Australia was the most frequently reported country of birth for cases in 2018 (17/39; 44%), followed by the major regions of North-West Europe (13%), South-East Asia (10%) and Sub-Saharan Africa (10%). Consistent with

previous years, subtype B remains the predominant circulating strain in South Australia. One case acquired in South Australia in 2018 had multiple drug resistance mutations.

There were four notifications of newly acquired hepatitis B infection in 2018, below the five year average (2013-2017) of eight cases per year. There were no notifications in the Aboriginal population, and cases continued to be predominantly notified in males (75%). Two cases were Australian born and two were born in the Southern and Central Asia major region. Two cases were acquired overseas.

There were 254 notifications of unspecified hepatitis B infection reported in 2018, a decrease compared to the five year average (2013-2017) of 325 cases per year. The notification rate has declined in the Aboriginal population over the past five years to a low of 9.2 per 100,000 population in 2018.
The notification rate in the non-Indigenous population in 2018 was 14.4 per 100,000. Cases were evenly split between males and females (50%). Eighty-seven 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 monitoring of a known case were the most common reasons for testing.

There were 41 notifications of newly acquired hepatitis C in 2018. Sixty-one per cent of cases were males, and 66% were aged 30 years and over. The notification rate of newly acquired hepatitis C cases in the Aboriginal population was 32.2 per 100,000 compared to 1.6 per 100,000 in the non-Indigenous population. The majority of cases were born in the major region of Oceania and Antarctica (90%). The most commonly reported risk marker was IDU in the previous two years (73%), and 83% of cases reported any history of IDU. The next most common risk marker was imprisonment (39%).

The notification rate of unspecified hepatitis C infection was 22.2 per 100,000 population in 2018, with a total of 385 notifications in 2018 compared to 465 in 2017. In 2018, 90% of notifications were for persons aged over 30 years and 66% of notifications were in males. IDU was a risk marker for 63% of cases. Sixty-four 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 103.4 per 100,000 than in the non-Indigenous population at 19.4 per 100,000 in 2018.

There were five new diagnoses of hepatitis D infection in 2018, below the five year average (2013-2017) of 9.8 cases per year. The notification rate was 0.3 per 100,000 population.

Table 1 Notifications of STI and BBV in South Australia, 2013 to 2018

Disease	2013	2014	2015	2016	2017	*Five year average 2013-2017*	2018
Chlamydia trachomatis	5,601	5,550	5,454	5,483	5,910	5,600	6,256
Gonorrhoea	820	750	813	1,110	1,272	953	1,288
Donovanosis	0	0	0	0	0	0	0
Syphilis: Infectious	43	29	69	89	159	77.8	203
Syphilis: Non-infectious	NA	NA	NA	56	63	NA	81
Syphilis: Congenital	0	0	0	0	1	0	0
Human immunodeficiency virus	69	54	57	53	61	58.8	39
Hepatitis B: Newly acquired	8	7	7	6	12	8	4
Hepatitis B: Unspecified	322	364	335	313	291	325	254
Hepatitis C: Newly acquired	64	45	43	45	32	45.8	41
Hepatitis C: Unspecified	548	518	487	499	465	503.4	385
Hepatitis D	12	9	9	9	10	9.8	5
TOTAL	**7,487***	**7,326***	**7,274***	**7,663**	**8,276**	**NA+**	**8,556**

*= Annual total does not include non-infectious syphilis for 2013, 2014 or 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 2018, *Chlamydia trachomatis* (chlamydia) was the most frequently reported STI in South Australia, consistent with previous years. There were 6,256 notifications of chlamydia in South Australia in 2018, an increase compared to 2017 (5,910 notifications), and the five year average (2013-2017) of 5,560 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 2018 was 360 per 100,000 population, consistent with the rate in 2017 of 343 per 100,000 population. There were 452 notifications in 2018 in people who identified as Aboriginal. The notification rate in the Aboriginal population in 2018 was 1,039 per 100,000 population, an increase from the 2017 rate of 834.3 per 100,000 population. The notification rate in non-Indigenous cases in 2018 was 301 per 100,000 population. Rates of notification were consistently higher in the Aboriginal population compared to the non-Indigenous population from 2014 to 2018 (Figure 2).

Fifty-six per cent of notifications in 2018 were in females (3,486/6,256). Notifications were most common in people aged 15 to 29 years (4,779/6,256; 76%) (Table 2). The median age of non-Indigenous cases in 2018 was 24 years, compared to 22 years for Aboriginal cases. In 2018, the majority of non-Indigenous cases were living in metropolitan South Australia at the time of diagnosis (4,137/4,942; 84%) compared to less than half (170/254; 40%) of the Indigenous cases residing in metropolitan areas at the time of diagnosis. Seventy-one percent of cases in 2018 were born in the major region of Oceania and Antarctica (4,447/6,256), followed by Sub-Saharan Africa (183/6,256; 3%) and South-East Asia (145/6,256; 2%). Of the cases born in the Oceania and Antarctica major region, 99% (4,395/4,447) were born in Australia, or 70% of cases overall (Table 2).

Persons infected with chlamydia were most likely to have sexual partners of the opposite sex in the 12 months prior to infection, where 81% (2,839/3,486) of females had male sexual partners and 66% (1,836/2,768) of males had female sexual partners. Twenty-one per cent of males (580/2,768) reported sexual contact with males (including those who reported sex with both males and females) and 4% of females (131/3,486) reported sex with females (including those who reported sex with both males and females). The majority of cases reported acquiring their infection in South Australia (83%; 5,165). Sexual contact with sex workers was reported by 69 cases (13 females and 56 males) and 35 persons (26 females, 8 males and 1 indeterminate sex) reported working as a sex worker (Table 3).

The most commonly cited reasons for ordering a diagnostic test were STI screening (31%; 1,947), clinical presentation with symptoms (30%; 1,893), and being a contact of a person infected with chlamydia (20%; 1,229). General practitioners (GP) located in metropolitan Adelaide were the most frequent notifiers (48%; 3,002), followed by the specialist sexual health service Adelaide Sexual Health Centre (ASHC) (14%; 876) and country GP (11%; 695) (Table 3).

The age specific notification rates in females (2,336 per 100,000 population) and males (1,707 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 4).

There were 7,162 positive clinical specimens reported from the 6,256 chlamydia cases notified in 2018. Several cases submitted multiple specimens, including different specimen types. Overall, urine specimens were most common (4,559/7,162; 64%) followed by vaginal (1,028/7,162; 14%) and cervical swabs (732/7,162; 10%) (Table 5).

Figure 1 Number of new diagnoses of chlamydia, by sex and year, South Australia, 2009 to 2018

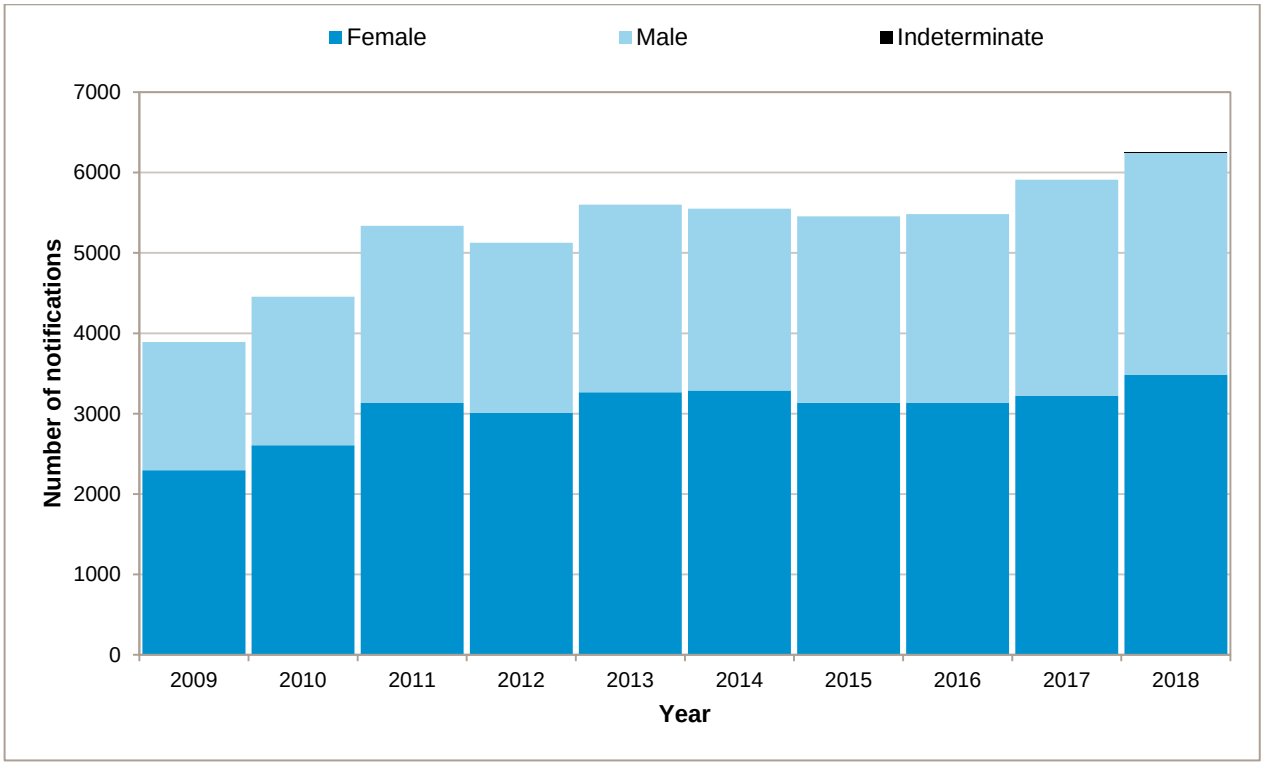


Figure 2 Chlamydia notification rate per 100,000 population, by Aboriginal status and year, South Australia, 2014 to 2018

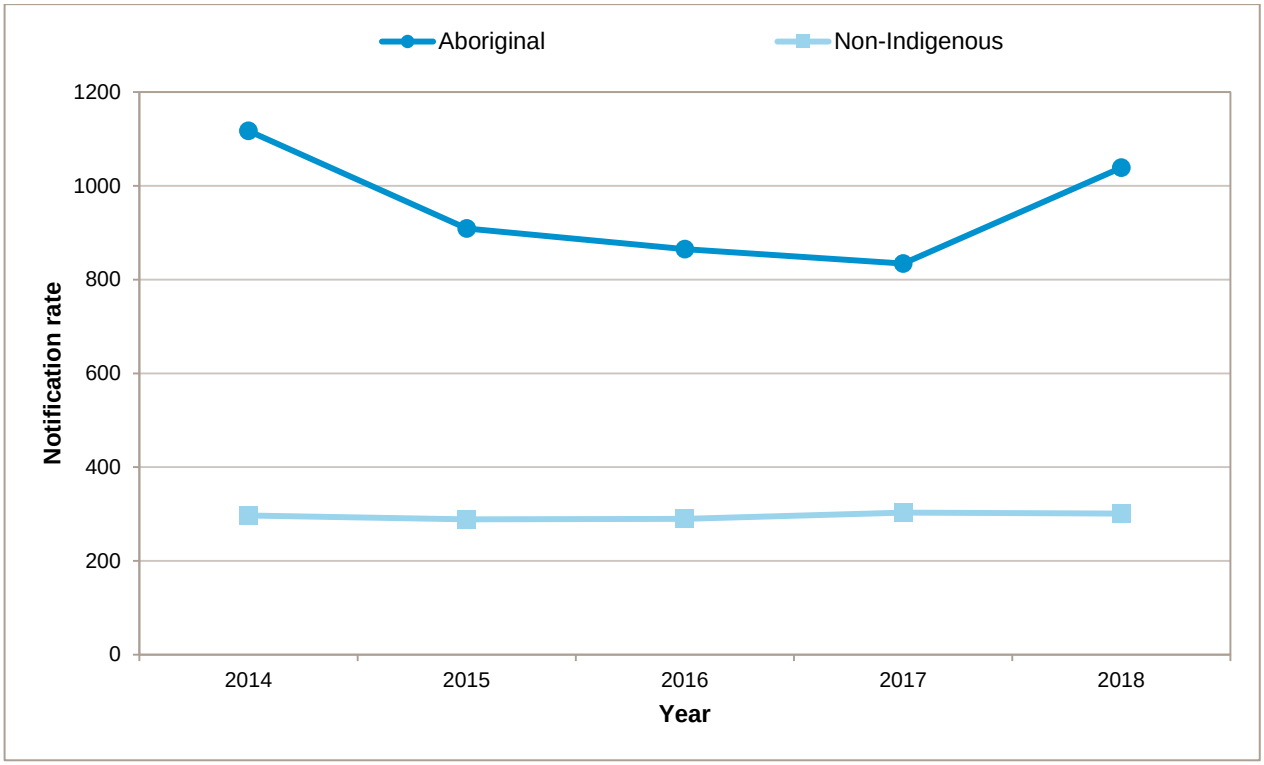


Table 2 Number of diagnoses of chlamydia, by epidemiological characteristics and year, South Australia, 2014 to 2018

	Year of diagnosis				
	2014	2015	2016	2017	2018
Number of notifications	**5,550**	**5,454**	**5,483**	**5,910**	**6,256**
Aboriginal and Torres Strait Islander status					
Aboriginal	445	370	360	355	452
Non-Indigenous	4,888	4,794	4,844	5,093	5,094
Not stated	217	290	279	462	710
Sex					
Female	3,289	3,134	3,136	3,225	3,486
Male	2,261	2,320	2,347	2,685	2,768
Indeterminate	0	0	0	0	2
Age-group (years)					
0-14	37	13	28	18	19
15-19	1,205	1,126	1,037	1,123	1,164
20-24	2,209	2,042	2,017	2,176	2,323
25-29	1,068	1,116	1,197	1,258	1,292
30-39	656	758	811	891	974
40-49	262	257	250	286	312
50-59	87	108	112	112	128
60+	26	34	31	46	44
Country of birth (by major region)					
Oceania and Antarctica	4,416	4,268	4,292	4,491	4,447
North-West Europe	131	121	101	104	90
Southern and Eastern Europe	31	28	30	33	31
South-East Asia	103	134	123	131	145
North-East Asia	97	137	131	106	115
Southern and Central Asia	35	30	35	46	52
Americas	45	40	37	22	32
North Africa and the Middle East	51	38	42	52	38
Sub-Saharan Africa	92	103	119	136	183
Not reported	174	265	573	789	1,123

Table 3 Exposure characteristics, reason for test and notification source of people diagnosed with chlamydia, by sex, South Australia, 2018

		2018 notifications			
		Female	Male	Indeter-minate	Total
Number of notifications		**3,486**	**2,768**	**2**	**6,256**
Exposure characteristics					
Sexual partners in last 12 months	Female	81	1,836	1	1,918
	Male	2,839	498	1	3,338
	Male and female	50	82	0	132
	Transgender	0	2	0	2
	No sexual contact	2	1	0	3
	Unknown	514	349	0	863
Likely location of infection acquisition	South Australia	2,887	2,276	2	5,165
	Interstate	53	44	0	97
	Overseas	47	96	0	143
	Unknown	499	352	0	851
Worked as a sex worker in last 12 months	Yes	26	8	1	35
	No	2,702	2,251	1	4,954
	Unknown	758	509	0	1,267
Had sexual activity with a sex worker in last 12 months	Yes	13	56	0	69
	No	2,781	2,172	2	4,955
	Unknown	692	540	0	1,232
Reason for test					
STI screening		1,174	772	1	1,947
Clinical symptoms		1,011	882	0	1,893
Contact of confirmed case		560	668	1	1,229
Screening for other purposes		194	115	0	309
Prison screening		5	10	0	15
Antenatal screening		93	0	0	93
Other/unknown		449	321	0	770
Notification source					
Metropolitan GP		1,794	1,208	0	3,002
ASHC		281	594	1	876
Country GP		406	289	0	695
SHine SA		231	171	1	403
Public hospital		193	25	0	218
Nganampa Health service		72	51	0	123
Other Aboriginal health services		58	29	0	87
Prison health service		13	22	0	35
Defence forces		4	45	0	49
Interstate public health unit		9	12	0	21
O'Brien Street Practice		0	46	0	46
Other		52	7	0	59
Unknown		373	269	0	642

Table 4 Number of chlamydia notifications by age group and age specific rates of chlamydia notifications, by sex, South Australia, 2018

Age group	Female		Male	
	Number of notifications	Rate per 100,000	Number of notifications	Rate per 100,000
0-14	19	12.7	0	0
15-19	886	1,766	277	525
20-24	1,311	2,336	1,012	1,707
25-29	664	1,152	628	1,079
30-39	452	397	521	426
40-49	122	111	190	174
50-59	29	25.3	99	89.3
60+	3	1.3	41	20.7

Table 5 Specimen collection sites for chlamydia notifications, by sex, South Australia, 2018

Specimen collection site	Female	Male	Indeter-minate	Total (%)
Urine	1,961	2,597	1	4,559 (64)
Vagina	1,028	0	0	1,028 (14)
Cervix	732	0	0	732 (10)
Rectum	162	402	1	565 (8)
Urethra	7	87	0	94 (1)
Throat	7	21	0	28 (0)
Other swab (including swab not further specified)	93	14	0	107 (1)
Unknown/not stated	36	13	0	49 (1)
Total	**4,026**	**3,134**	**2**	**7,162**

Gonorrhoea

In 2018, there were 1,288 notifications of gonorrhoea in South Australia, similar to the number of cases in 2017 of 1,272, and an increase compared to the five year average (2013-2017) of 953 cases per year. Figure 3 is a ten year epidemic curve of gonorrhoea in South Australia by sex demonstrating the increase in cases since 2013.

The notification rate of gonorrhoea in 2018 was 74 per 100,000 population, the same as that of 2017 at 74 per 100,000 population. In 2018, there were 346 notifications in people who identified as Aboriginal. The notification rate in the Aboriginal population rose to 813 per 100,000 in 2018, up from 608 per 100,000 in 2017. Notification rates in the non-Indigenous population remained lower than for the Aboriginal population at 55 per 100,000 in 2018 and 60 per 100,000 in 2017 (Figure 4).

Notifications in 2018 were predominantly in males (836/1,288; 65%), consistent with 2016 and 2017 (Table 6). Seventy-two per cent of notifications were in people aged 20 to 39 years. The median age of cases in 2018 was 28 years (range 12 days to 72 years). There were four cases who were less than 1 year of age; all had conjunctivitis with eye swabs positive for gonorrhoea within two months of birth. Three hundred and forty six cases were in people who identified as Aboriginal, including 40 cases (12%) residing in metropolitan Adelaide and 301 (88%) from rural and remote regions of South Australia. The median age of Aboriginal cases was 25 years (range 13 to 60 years). Non-Indigenous cases were predominantly residents of metropolitan Adelaide at the time of their diagnosis (819/923; 89%). The majority of cases notified in 2018 were born in the Oceania and Antarctica major region (1,087/1,288; 84%), with 1,076 born in Australia. South-East Asia was the next most common major region for country of birth for cases in 2018 (Table 6).

Males diagnosed with gonorrhoea in 2018 were slightly more likely to report sexual contact with only females (400/836;48%), compared to male-to-male sex (383/836; 46%, including 38 people who reported sex with both males and females). Females with gonorrhoea were more likely to report sexual contact with males (398/452; 88%) than females (5/452; 1%) or males and females (9/452; 2%). Infections were most commonly acquired in South Australia (1,094/1,288; 85%). Thirteen cases reported working as a sex worker in 2018 (nine females and four males), and 37 cases (all were males) reported sexual activity with a sex worker in the previous 12 months (Table 7).

The most commonly cited reasons for ordering a test in cases notified in 2018 were clinical symptoms (547/1,288; 43%) and STI screening (444/1,288; 35%), with a further 200 cases (16%) tested as they were a sexual contact of a previously confirmed case. Metropolitan GP were the most common notification source (424/1,288; 33%), followed by the ASHC (305/1,288; 24%) (Table 7).

The highest age specific notification rates were in the 20-24 year old age group for both males and females, but higher in males (352.5 per 100,000 population) than females (210.2 per 100,000 population) (Table 8).

Of the 1,288 gonorrhoea notifications in 2018, 637 (50%) were reported as symptomatic infections (in 185 females and 452 males) and 587 (46%) were reported as asymptomatic infections (in 240 females and 347 males). Information was unknown or missing for 64 notifications.

There were 2,221 positive specimens reported from the 1,288 gonorrhoea cases notified in 2018. Several cases submitted multiple specimens, including different specimen types. Urine samples were the most common specimen type, with 776 specimens (35%), followed by rectal swabs (361; 16%) and urethral swabs (15%) (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).

Figure 3 Number of new diagnoses of gonorrhoea, by sex and year, South Australia, 2009 to 2018

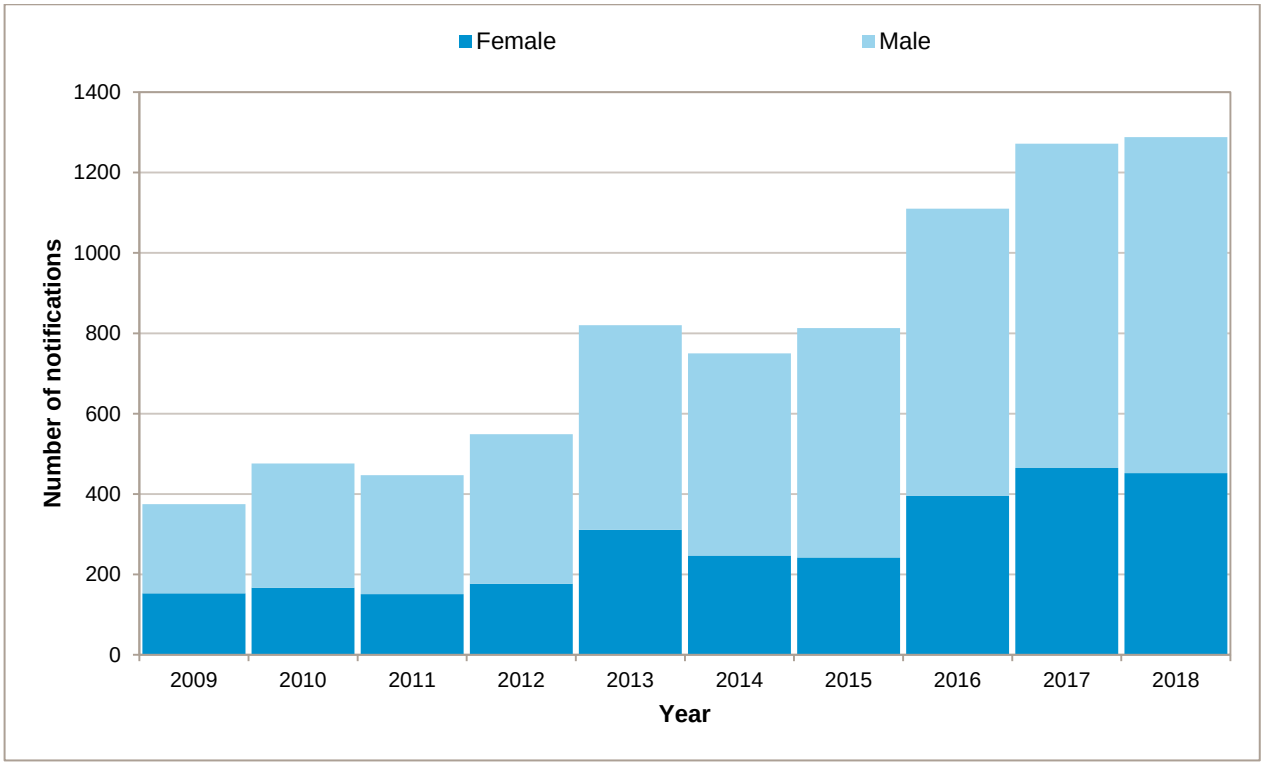


Figure 4 Gonorrhoea notification rate per 100,000 population, by Aboriginal status and year, South Australia, 2014 to 2018

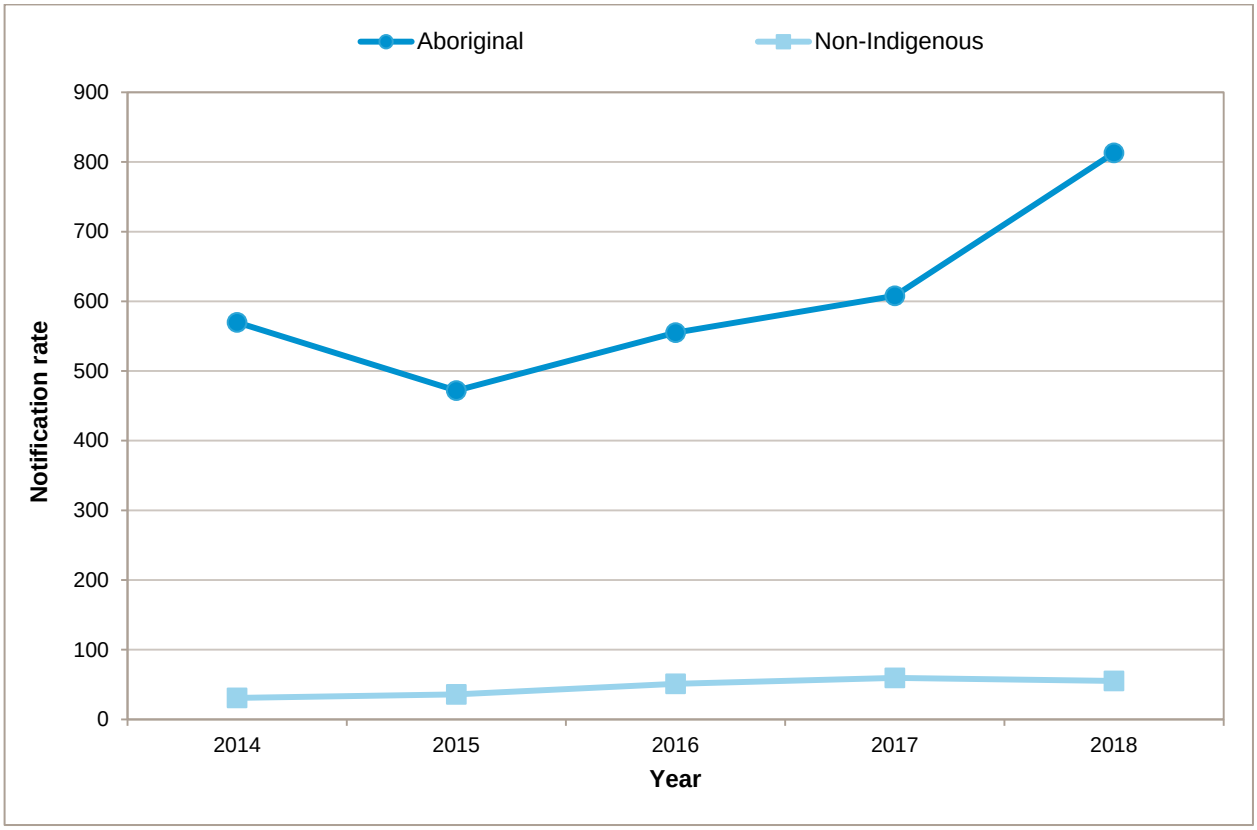


Table 6 Number of diagnoses of gonorrhoea, by epidemiological characteristics and year, South Australia, 2014 to 2018

	Year of diagnosis				
	2014	2015	2016	2017	2018
Number of notifications	**750**	**813**	**1,110**	**1,272**	**1,288**
Aboriginal and Torres Strait Islander status					
Aboriginal	227	188	226	253	346
Non-Indigenous	508	594	851	1,002	932
Not stated	15	31	33	17	10
Sex					
Female	247	242	396	465	452
Male	503	571	714	807	836
Age-group (years)					
0-14	12	3	8	12	14
15-19	128	85	118	135	123
20-24	190	202	283	326	327
25-29	156	148	270	257	257
30-39	156	218	259	346	344
40-49	70	88	102	129	136
50-59	32	53	50	44	65
60+	6	16	20	23	22
Country of birth (by major region)					
Oceania and Antarctica	625	644	886	1,084	1,087
North-West Europe	23	26	28	25	20
Southern and Eastern Europe	1	5	8	4	8
South-East Asia	16	32	34	32	32
North-East Asia	14	6	18	19	26
Southern and Central Asia	10	13	21	10	11
Americas	14	12	12	4	10
North Africa and the Middle East	7	7	7	5	6
Sub-Saharan Africa	0	12	7	15	14
Not reported	40	56	89	74	74

Table 7 Exposure characteristics, reason for test and notification source of people diagnosed with gonorrhoea, by sex, South Australia, 2018

		2018 notifications		
		Female	Male	Total
Number of notifications		**452**	**836**	**1,288**
Exposure characteristics				
Sexual partners in last 12 months	Female	5	400	405
	Male	398	345	743
	Male and female	9	38	47
	No sexual contact	1	1	2
	Unknown/missing	39	52	91
Likely location of infection acquisition	South Australia	384	710	1,094
	Interstate	23	31	54
	Overseas	5	42	47
	Unknown/missing	40	53	93
Worked as a sex worker in last 12 months	Yes	9	4	13
	No	367	737	1104
	Unknown/missing	76	95	171
Had sexual activity with a sex worker in last 12 months	Yes	0	37	37
	No	286	616	902
	Unknown/missing	166	183	349
Reason for test				
Clinical symptoms		137	410	547
STI screening		192	252	444
Contact of confirmed case		89	111	200
Screening for other purposes		9	33	42
Antenatal screening		7	0	7
Prison screening		2	3	5
Other/unknown		16	27	43
Notification source				
Metropolitan GP		160	264	424
ASHC		37	268	305
Nganampa health service		118	95	213
Country GP		32	48	80
SHine SA		15	48	63
Other Aboriginal Health services		30	28	58
Public hospital		32	19	51
O'Brien Street Practice		0	31	31
Interstate public health unit		8	8	16
Prison health service		3	9	12
Defence forces		0	4	4
Other		6	0	6
Unknown		11	14	25

Table 8 Number of gonorrhoea notifications by age group and age specific rates of gonorrhoea notifications, by sex, South Australia, 2018

Age group	Female		Male	
	Number of notifications	Rate per 100,000	Number of notifications	Rate per 100,000
0-14	10	6.7	4	2.5
15-19	72	143.5	51	96.6
20-24	118	210.2	209	352.5
25-29	93	161.3	164	281.7
30-39	116	101.9	228	186.2
40-49	31	28.1	105	96.2
50-59	9	7.8	56	50.5
60+	3	1.3	19	9.6

Table 9 Specimen collection sites for gonorrhoea notifications, by sex, South Australia, 2018

Specimen collection site	Female	Male	Total (%)
Urine	217	559	776 (35)
Rectum	32	329	361 (16)
Urethra	0	324	324 (15)
Vagina	286	0	286 (13)
Throat/pharynx	15	266	281 (13)
Cervix	131	0	131 (6)
Eye	11	10	21 (1)
Blood - venous	1	0	1 (0)
Other/not stated	23	17	40 (2)
Total	**716**	**1,505**	**2,221**

Infectious syphilis

In 2018, there were 203 notifications of infectious syphilis (infections of less than two years' duration) in South Australia, an increase compared to 2017 with 159 notifications and an increase compared to the five year average (2013-2017) of 77.8 notifications per year (Figure 5). From 2015 onwards, South Australia adopted the surveillance case definition for the Australian National Notifiable Diseases Surveillance System, which includes confirmed and probable infectious syphilis categories. Thirty-five of the cases in 2018 met the probable case definition, and 168 were confirmed cases.

The notification rate in 2018 was 11.7 per 100,000 population, an increase from 9.2 per 100,000 population in 2017. Notification rates in the Aboriginal population rose to 89.6 per 100,000 in 2018, up from 68.2 per 100,000 in 2017. Notification rates in the non-Indigenous population also rose in 2018 to 9.7 per 100,000 compared to 7.7 per 100,000 in 2017 (Figure 6).

Notifications in 2018 were predominantly in males (179/203; 88%), consistent with previous years (Table 10). The median age of all cases in 2018 was 33 years (range 18 to 73 years), a decrease compared to 2017 with a median of 37 years. Thirty-nine cases were in people who identified as Aboriginal, including 12 cases from metropolitan Adelaide, 26 from rural South Australia and one staying interstate at the time of diagnosis. The median age of Aboriginal cases in 2018 was 27 years (range 20 to 68 years), compared to a median age of non-Indigenous cases of 34 years (range 18 to 73 years). Non-Indigenous cases were predominantly residents of metropolitan Adelaide at the time of their diagnosis (134/164; 82%). The majority of cases notified in 2018 were born in the Oceania and Antarctica major region (169/203; 83%), with 165 born in Australia. In 2018, there were cases reported who were born in each of the other major regions, but each had less than 10 cases per major region (Table 10).

Males diagnosed with infectious syphilis in 2018 were most likely to report sexual contact with males (135/179; 75%, including 28 cases reporting sexual contact with both males and females), and female cases exclusively reported sexual contact with males. Infections were most commonly acquired in South Australia (157/203; 77%). No cases reported work as a sex worker in the 12 months prior to infection and six cases reported sexual activity with a sex worker in the 12 months prior to infection (Table 11).

The most commonly cited reasons for ordering a test in cases notified in 2018 were clinical symptoms (103/203; 51%) and STI screening (61/203; 30%), with a further 18 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 General Practice 8%) in 2018, along with metropolitan GPs (40 cases; 20%) (Table 11).

In 2018, the most commonly reported stage of infectious syphilis at the time of notification was early latent syphilis (80/203; 39%), followed by primary syphilis (69/203; 34%) (Table 12).

Figure 5 Number of new diagnoses of infectious syphilis, by sex and year, South Australia, 2009 to 2018

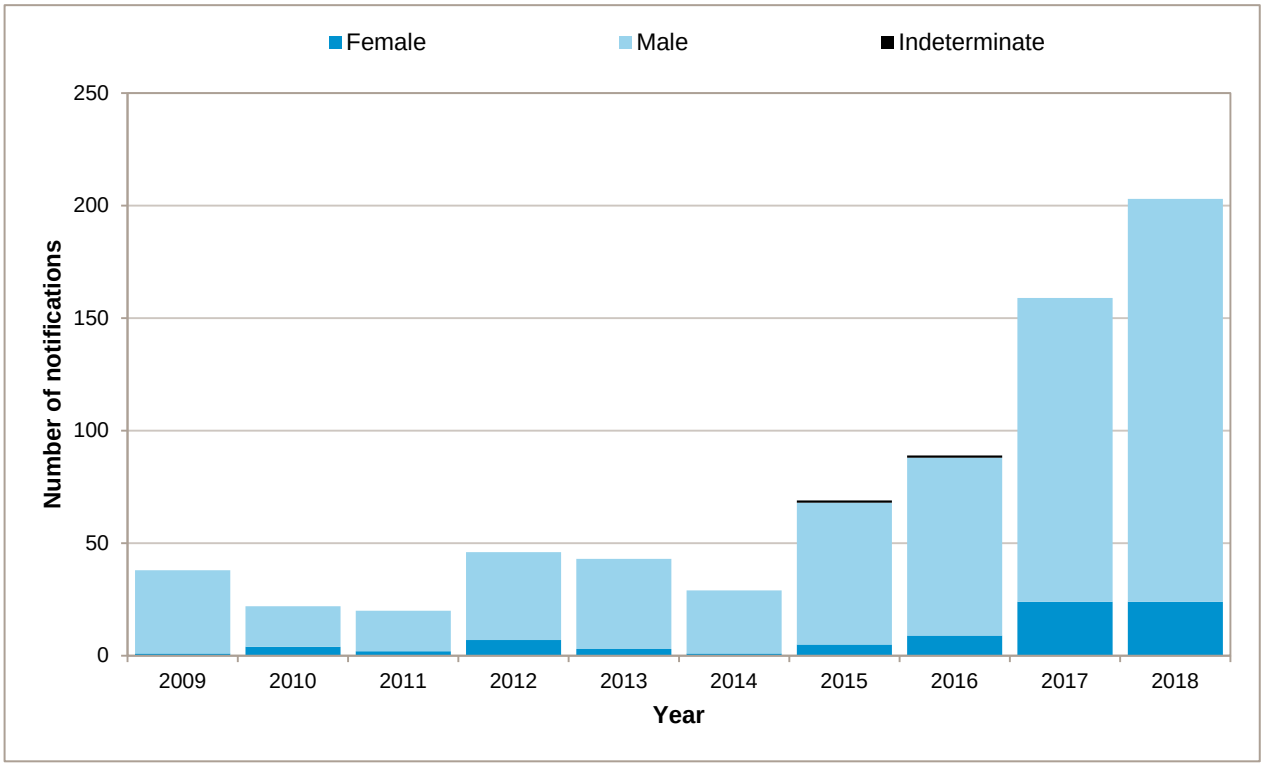


Figure 6 Infectious syphilis notification rate per 100,000 population, by Aboriginal status and year, South Australia, 2014 to 2018

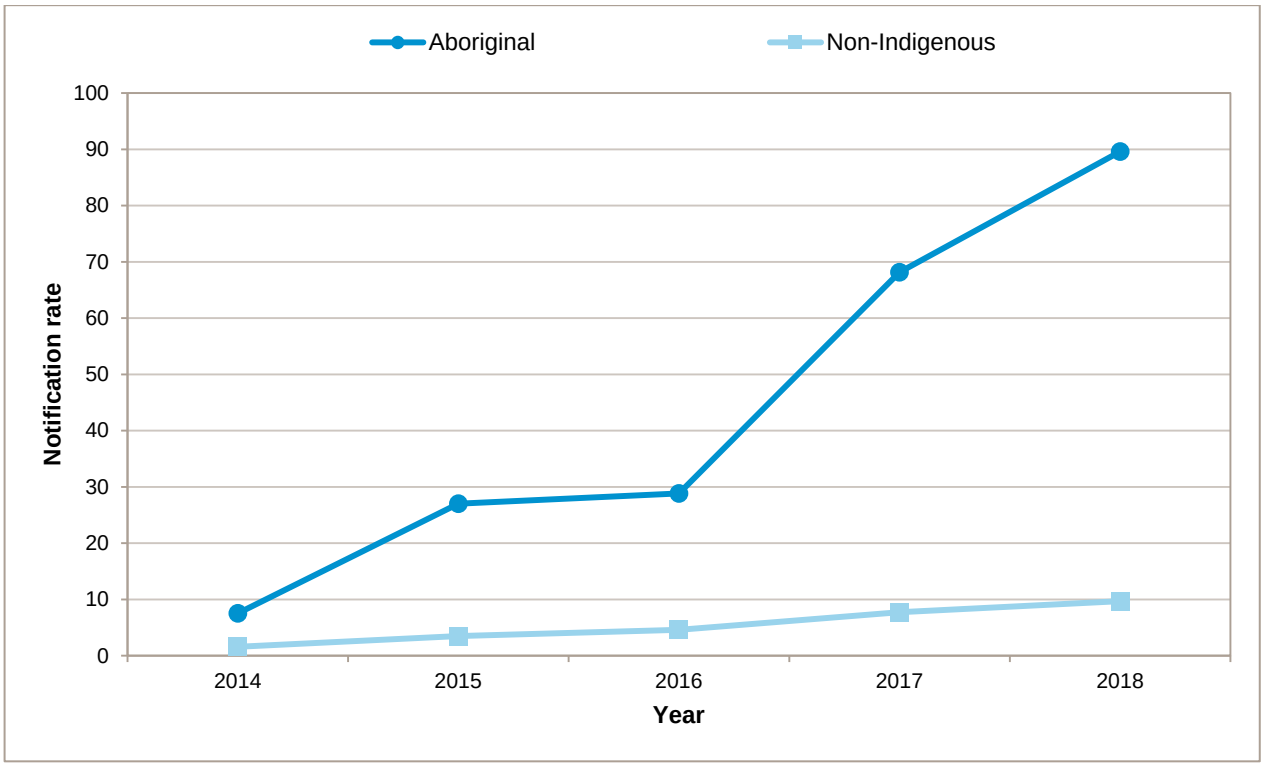


Table 10 Number of diagnoses of infectious syphilis, by epidemiological characteristics and year, South Australia, 2014 to 2018

	Year of diagnosis				
	2014	2015	2016	2017	2018
Number of notifications					
Confirmed	29	56	75	141	168
Probable	NA	13	14	18	35
Aboriginal and Torres Strait Islander status					
Aboriginal	3	11	12	29	39
Non-Indigenous	26	58	77	130	164
Not stated	0	0	0	0	0
Sex					
Female	1	5	9	24	24
Male	28	63	79	135	179
Indeterminate	0	1	1	0	0
Age-group (years)					
0-14	0	0	0	0	0
15-19	2	0	2	2	1
20-24	1	9	12	17	44
25-29	3	17	20	27	38
30-39	12	14	23	47	47
40-49	3	16	19	26	36
50-59	7	7	9	26	19
60+	1	6	4	14	18
Country of birth (by major region)					
Oceania and Antarctica	21	56	74	127	169
North-West Europe	2	6	3	7	6
Southern and Eastern Europe	0	0	1	3	2
South-East Asia	1	3	3	7	6
North-East Asia	0	1	0	6	4
Southern and Central Asia	0	1	2	1	5
Americas	3	0	3	1	4
North Africa and the Middle East	0	0	1	3	4
Sub-Saharan Africa	1	2	1	3	1
Not reported	1	0	1	1	2

NA = Not applicable

Table 11 Exposure characteristics, reason for test and notification source of people diagnosed with infectious syphilis, by sex, South Australia, 2018

		2018 notifications		
		Female	Male	Total
Number of notifications		**24**	**179**	**203**
Exposure characteristics				
Sexual partners in last 12 months	Female	0	39	39
	Male	24	107	131
	Male and female	0	28	28
	No sexual contact	0	2	2
	Transgender	0	1	1
	Unknown	0	2	2
Likely location of infection acquisition	South Australia	20	137	157
	Interstate	2	8	10
	Overseas	1	20	21
	Unknown	1	14	15
Worked as a sex worker in last 12 months	Yes	0	0	0
	No	19	170	189
	Unknown	5	9	14
Had sexual activity with a sex worker in last 12 months	Yes	0	6	6
	No	17	152	169
	Unknown	7	21	28
Reason for test				
Clinical symptoms		7	96	103
STI screening		9	52	61
Contact of confirmed case		4	14	18
Screening for other purposes		1	14	15
Antenatal screening		3	1	4
Other		0	2	2
Notification source				
ASHC		0	75	75
O'Brien Street General Practice		0	16	16
Metropolitan GP		4	36	40
Public hospital		1	11	12
Country GP		5	12	17
SHINE SA		0	7	7
Nganampa Health services		6	9	15
Other Aboriginal health services		5	3	8
Prison health service		2	2	4
Interstate public health unit		1	3	4
Private hospital		0	1	1
Other		0	4	4

Table 12 Staging of infectious syphilis cases for clinical management, by sex, South Australia, 2018

Syphilis staging	Female	Male	Total
Primary	5	64	69
Secondary	1	50	51
Early latent	18	62	80
Early neurosyphilis	0	2	2
Not staged	0	1	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, South Australia noted an increase in infectious syphilis cases in Indigenous people in the Western and Eyre, and Far North regions and became part of the multijurisdictional outbreak. An increase in Indigenous 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 2018, there were 39 South Australian cases that met the outbreak case definition. The cases included 14 females and 25 males, with a median age of 27 years (range 20 to 68 years). Twenty-four of the cases in 2018 (62%) were from the Far North region, 14 (36%) were from the Adelaide region and one was from the Western and Eyre region.

Congenital syphilis

There were no cases of congenital syphilis reported in 2018.

Syphilis (unspecified)

In 2018, there were 81 notifications of unspecified syphilis[*] (greater than two years' duration or unspecified) in South Australia, an increase compared to 2017 with 63 cases.

The notification rate of unspecified syphilis in 2018 was 4.66 per 100,000 population, compared to the rate in 2017 of 3.65 per 100,000 population. The notification rate in the Aboriginal population rose to 57 per 100,000 in 2018, up from 47 per 100,000 in 2017. Notification rates in the non-Indigenous population remained stable at 3 per 100,000 in 2018 and 2017 (Figure 7).

Notifications in 2018 were predominantly in males (54/81; 67%), consistent with 2017 and 2016 (Table 13). The median age of cases in 2018 was 52 years (range 13 to 85 years), a small increase compared to 2017 with a median age of 48 years (range 18 to 94 years). Twenty-five cases were in people who identified as Aboriginal, with a median age of 49 years (range 20 to 71 years). The Aboriginal cases included nine cases who were residents in metropolitan areas at the time of diagnosis and 16 cases who were residents in rural and remote areas. Non-Indigenous cases were predominantly residents of metropolitan Adelaide at the time of their diagnosis (48/55; 87%). The majority of cases notified in 2018 were born in the Oceania and Antarctica major region (44/81; 54%), with 43 born in Australia. South-East Asia was the next most common major region for country of birth for cases in 2018 (Table 13).

Males diagnosed with unspecified syphilis in 2018 included 48% (26/54) of cases who reported female sexual contacts and 39% who reported sexual contact with males (21/54, including three who reported sexual contact with both males and females). Female cases were most likely to report sexual contact with males (17/27; 63%). Cases were most likely to acquire their illness in South Australia (43/81; 53%) (Table 14). Few cases reported contact with a sex worker in the 12 months prior to their diagnosis (4/81; 5%) and there were no cases who reported work as a sex worker. The most common reason for testing was an STI screen (39/81; 48%), followed by screening for other purposes (16/81; 20%). Cases were most likely to be diagnosed by metropolitan GP (27/81; 33%), followed by the ASHC (13/81; 16%) and Aboriginal Health Services (13/81; 16%).

The majority of unspecified syphilis cases in 2018 were staged as late latent (asymptomatic) (77/81; 95%) for clinical management.

[*] Unspecified 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.

Figure 7 Unspecified syphilis notification rate per 100,000 population, by Aboriginal status and year, South Australia, 2016 to 2018

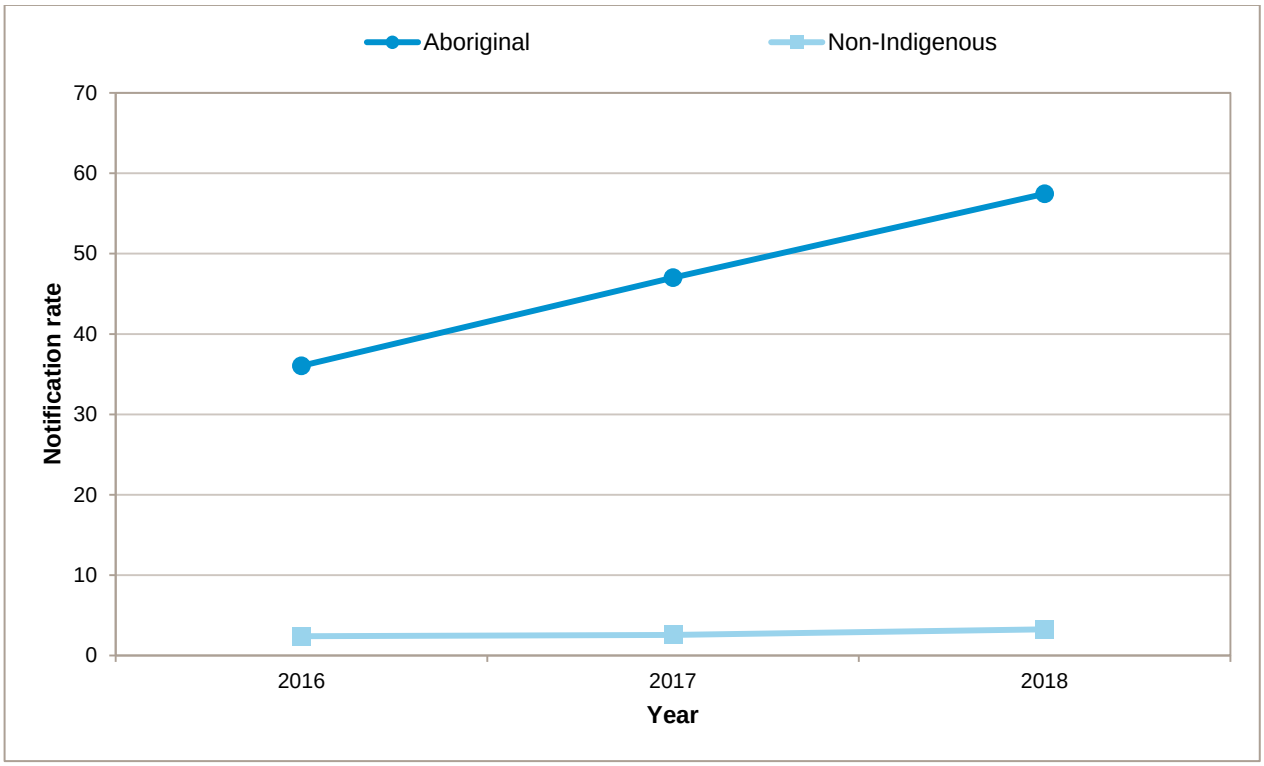


Table 13 Number of diagnoses of unspecified syphilis, by epidemiological characteristics and year, South Australia, 2016 to 2018

	Year of diagnosis		
	2016	2017	2018
Number of confirmed notifications	**56**	**63**	**81**
Aboriginal and Torres Strait Islander status			
Aboriginal	15	20	25
Non-Indigenous	40	43	55
Not stated	1	0	1
Sex			
Female	15	12	27
Male	41	51	54
Age-group (years)			
0-14	0	0	1
15-19	0	1	0
20-24	2	0	4
25-29	5	2	6
30-39	18	16	14
40-49	7	16	15
50-59	8	15	23
60+	16	13	18
Country of birth (by major region)			
Oceania and Antarctica	25	38	44
North-West Europe	4	2	2
Southern and Eastern Europe	1	2	0
South-East Asia	8	8	10
North-East Asia	4	1	0
Southern and Central Asia	5	2	7
Americas	3	1	3
North Africa and the Middle East	4	4	3
Sub-Saharan Africa	1	5	7
Not reported	1	0	5

Table 14 Exposure characteristics, reason for test and notification source of people diagnosed with unspecified syphilis, by sex, South Australia, 2018

		2018 notifications		
		Female	Male	Total
Number of notifications		**27**	**54**	**81**
Exposure characteristics				
Sexual partners in last 12 months	Female	1	26	27
	Male	17	18	35
	Male and female	0	3	3
	No sexual contact	2	2	4
	Unknown/missing	7	6	13
Likely location of infection acquisition	South Australia	12	31	43
	Interstate	0	2	2
	Overseas	7	9	16
	Unknown/missing	8	12	20
Worked as a sex worker in last 12 months	Yes	0	0	0
	No	22	44	66
	Unknown/missing	5	10	15
Had sexual activity with a sex worker in last 12 months	Yes	0	4	4
	No	20	44	64
	Unknown/missing	7	6	13
Reason for test				
STI screening		13	26	39
Screening for other purposes		5	11	16
Clinical symptoms		0	6	6
Antenatal screening		5	1	6
Contact of confirmed case		1	4	5
Prison screening		0	2	2
Other		1	3	4
Unknown		2	1	3
Notification source				
Metropolitan GP		10	17	27
ASHC		2	11	13
Aboriginal health services		8	5	13
Public hospital		5	6	11
Migrant health service		0	3	3
Country GP		2	1	3
SHine SA		0	3	3
O'Brien Street Practice		0	2	2
Prison health service		0	2	2
Interstate public health unit		0	2	2
Other		0	2	2

Human immunodeficiency virus

In 2018, there were 39 notifications of human immunodeficiency virus infection (HIV) in South Australia, a decrease compared to 61 cases in 2017, and the five year average (2013-2017) of 58.8 cases per year. Figure 8 is a 10 year epidemic curve of HIV in South Australia by sex demonstrating the consistently higher proportion of males than females reported per year.

The notification rate of HIV in 2018 was 2.25 per 100,000 population, below that in 2017 of 3.54 per 100,000 population. The notification rate in the Aboriginal population reduced to 2.3 per 100,000 in 2018, compared to 11.8 in 2017 (note changes in rates within the Aboriginal population should be interpreted with caution with small case numbers per year for the past five years). Notification rates in the non-Indigenous population in 2018 were similar to the Aboriginal population at 2.2 per 100,000 population (Figure 9).

Notifications in 2018 were predominantly in males (32; 82%), consistent with previous years. The median age of cases in 2018 was 37 years (range 19 to 74 years), similar to 2017 with a median age of 37 years (range 21 to 62 years). In 2018, one case was in a person who identified as Aboriginal. HIV cases in 2018 were predominantly residents of metropolitan Adelaide at the time of their diagnosis (37; 95%). The most common major region of birth for cases notified in 2018 was the Oceania and Antarctica major region (17; 44%), with all 17 born in Australia. North-West Europe (5; 13%), South-East Asia (4; 10%) and Sub-Saharan Africa (4; 10%) were the next most common major regions of birth for cases in 2018 (Table 15).

Males diagnosed with HIV in 2018 were more likely to report male-to-male sexual contact (20/32; 63%, including two who reported sex with both males and females), than with females (11; 28%). Six females diagnosed with HIV reported sexual contact with males (86%) and one case reported sexual contact with both males and females (14%). Infections were most commonly acquired overseas in 2018 (20; 51%) followed by acquisition in South Australia (18; 46%). The majority of cases were likely exposed to HIV via sexual contact (29; 74%), followed by sexual contact and IDU (89; 21%) (Table 16).

Of the new HIV notifications in 2018, seven (18%) were previously diagnosed overseas. The most frequently reported testing history for Australian diagnoses was a previous HIV negative test more than 12 months prior to diagnosis (17; 44%). Metropolitan GPs notified the highest proportion of HIV cases in 2018 (17; 44%) followed by the ASHC (11; 28%) (Table 16).

In 2018, 63% of male HIV cases (20/32) reported male-to male sex, compared to 2017 where 74% (37/50) of male HIV cases reported male-to male sex. Four MSM cases in 2018 also reported IDU as a risk factor. Ten MSM cases were born in the Oceania and Antarctica major region, all born in Australia (50%). South East-Asia (4; 20%) was the next most common major region for country of birth for MSM cases, followed by North-West Europe (3; 15%) and one each from Southern and Eastern Europe, and the Americas; one had an unknown major region of birth. Thirteen MSM cases (65%) reported they acquired their infection in South Australia, followed by seven acquired overseas (35%). Three MSM cases were known positive cases previously diagnosed overseas. Information on previous testing for MSM cases included 10 cases who had their last negative HIV test more than 12 months before their diagnosis, four were tested less than 12 months before their diagnosis and three were never previously tested.

There were 11 (34%) males diagnosed with HIV in 2018 who reported sex with females compared to 13 (26%) cases in 2017. Three males reporting heterosexual sex in 2018 also reported IDU as a risk factor. Of the males reporting heterosexual sex, six were born in the Oceania and Antarctic major region (all in Australia), and two each were born in the major regions of North-East Asia, Sub-Saharan Africa and one in North-West Europe. The majority of these cases acquired their infection overseas (six cases), four acquired in South Australia and one unknown. Four cases had never previously been tested for HIV, three were tested greater than 12 months prior, two tested less than 12 months prior, one had a known previous

diagnosis overseas and one was unknown. Additionally, the sexual contacts were unknown or not reported for one male diagnosed with HIV in 2018.

In 2018, six of seven females notified with HIV reported male sexual contacts, compared to all female cases in 2017. One case reported sexual contact with both males and females. One female case also reported IDU as a risk factor. Two females reported sexual partners of the opposite sex from overseas as the risk factor for their infection. Three females were born in the major region of North Africa and the Middle East and one each from Oceania and Antarctica, North-West Europe, North-East Asia and Sub-Saharan Africa major regions. Six female cases reported acquisition of infection overseas and one acquired in South Australia.

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^3 is indicative of immune suppression and late HIV diagnosis. Where CD4 counts were available, 18 males and four females (22; 56%) had CD4 lymphocyte counts indicative of late diagnosis, with data missing for two males (2; 5%). This is compared to 64% (39/61) of newly diagnosed cases in 2017 with CD4 counts indicative of late diagnosis. Eight of the males with CD4 counts below 350 cells/mm^3 at diagnosis were MSM. Of the cases with CD4 counts indicative of late diagnosis twelve were born in the Oceania and Antarctica major region, four cases were from North-West Europe, two from Sub-Saharan Africa and one each from the major regions of North Africa and Middle East, South-East Asia, North-East Asia and the Americas.

In 2018, gene sequenced subtype data was available for 25 (64%) 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 South Australia in 2018 with 16 of the 25 cases with typing (64%) typed as this strain, 14 of whom acquired the infection in South Australia. Subtype B is consistently the most common subtype in South Australia, including 27 of 43 (63%) typed cases in 2017 and 26 of 44 cases in 2016 (59%). Subtype CRF01_AE was the next most commonly identified strain with seven cases (28%), with six cases acquiring infection overseas and one in South Australia. No strain data was available for three locally acquired cases, ten overseas acquired cases and one case with an unknown location of infection at the time of reporting (Table 17).

Subtype B was also most commonly reported in those who reported male-to-male sex (11; 44%, including one case who had sex with both males and females), but was also identified in both males and females who had sexual partners of the opposite sex. Subtype CRF01_AE was reported in four males, two reporting sexual contact with females and two with males, and all three females with this subtype had male sexual partners (Table 18).

Drug resistance mutations were identified in nine HIV cases notified in 2018. The majority of cases were identified with K103N resistance (six cases); 83% (5/6) of whom acquired their infections in South Australia. There was one infection acquired overseas that had V90I resistance identified and two locally acquired cases with different resistance (one with K103S and one with two mutations M184V/M184I) (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 diagnoses of HIV, by sex and year, South Australia, 2009 to 2018

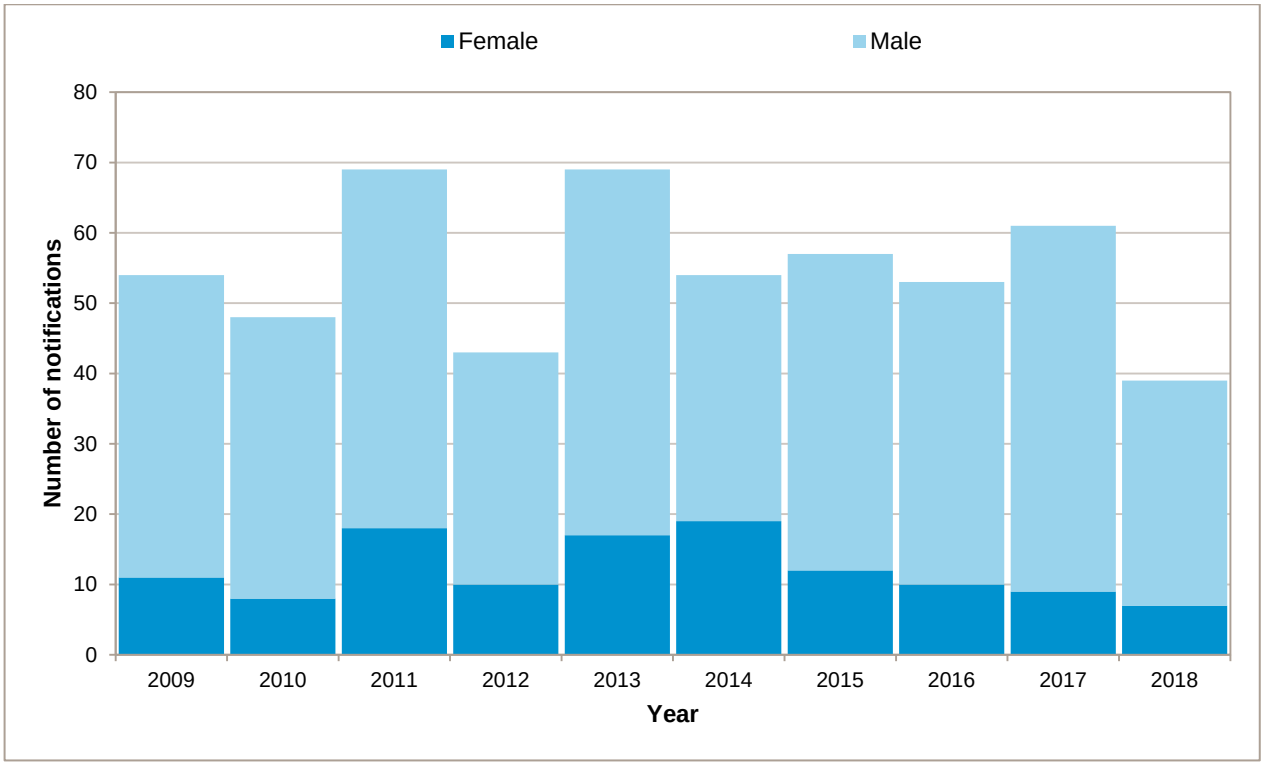


Figure 9 HIV notification rate per 100,000 population, by Aboriginal status and year, South Australia, 2014 to 2018

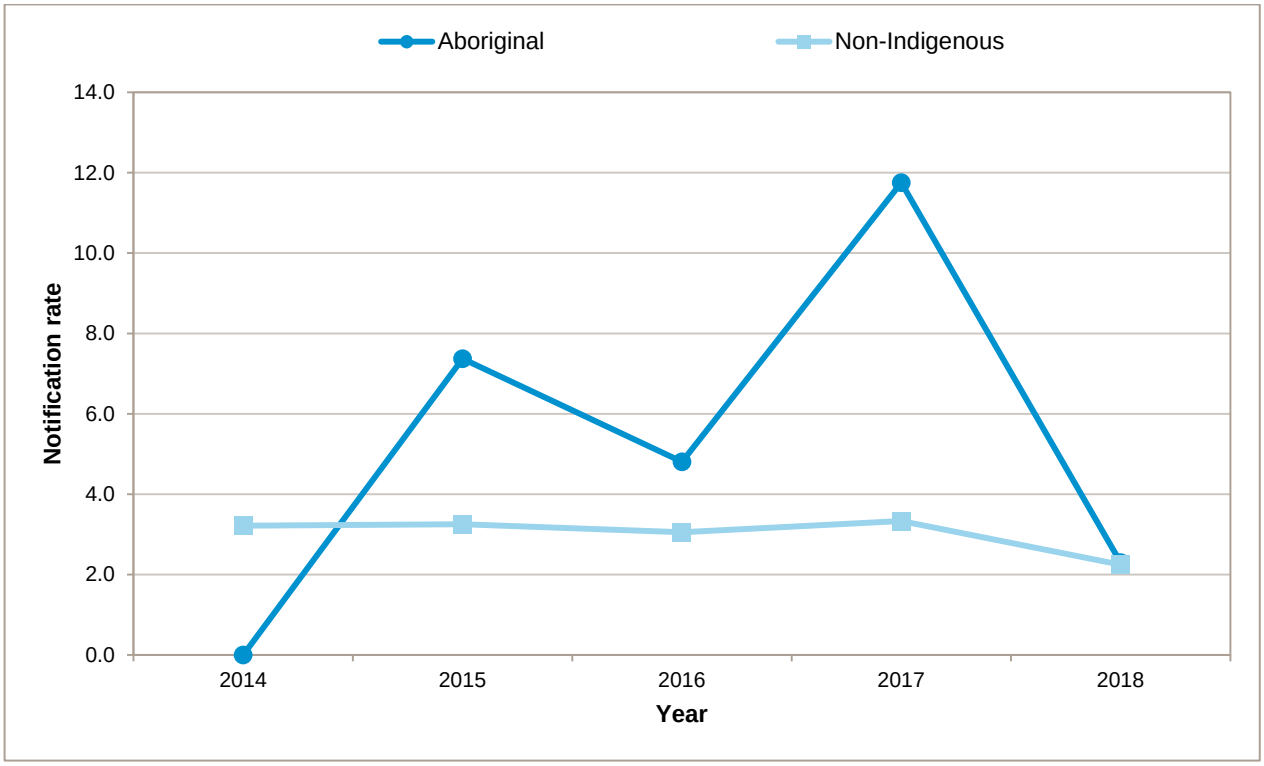


Table 15 Number of diagnoses of HIV, by epidemiological characteristics and year, South Australia, 2014 to 2018

	Year of diagnosis				
	2014	2015	2016	2017	2018
Number of notifications	**54**	**57**	**53**	**61**	**39**
Aboriginal and Torres Strait Islander status					
Aboriginal	0	3	2	5	1
Non-Indigenous	53	54	51	56	38
Not stated	1	0	0	0	0
Sex					
Female	19	12	10	9	7
Male	35	45	43	52	32
Age-group (years)					
0-14	0	0	0	0	0
15-19	0	4	2	0	1
20-24	5	9	6	8	5
25-29	13	6	9	8	4
30-39	17	16	18	24	12
40-49	8	14	7	15	8
50-59	6	4	7	5	6
60+	5	4	4	1	3
Country of birth (by major region)					
Oceania and Antarctica	27	29	26	34	17
North-West Europe	2	5	1	3	5
Southern and Eastern Europe	1	0	2	1	1
South-East Asia	0	3	1	8	4
North-East Asia	2	0	4	0	3
Southern and Central Asia	1	1	1	0	0
Americas	2	1	3	2	1
North Africa and the Middle East	8	9	10	10	3
Sub-Saharan Africa	10	8	5	2	4
Not reported	1	1	0	1	1

Table 16 Exposure characteristics, reason for test and notification source of people diagnosed with HIV, by sex, South Australia, 2018

		2018 notifications		
		Female	Male	Total
Number of notifications		**7**	**32**	**39**
Exposure characteristics				
Sexual partners in last 12 months	Female	0	11	11
	Male	6	18	24
	Male and female	1	2	3
	Unknown	0	1	1
Likely location of infection acquisition	South Australia	1	17	18
	Interstate	0	0	0
	Overseas	6	14	20
	Unknown	0	1	1
HIV exposure category	Sexual contact	6	23	29
	Sexual contact and IDU	1	7	8
	Unknown	0	2	2
HIV testing history				
No prior test		1	7	8
Test < 12 months prior to diagnosis		0	6	6
Test > 12 months prior to diagnosis		4	13	17
Previously diagnosed HIV positive overseas		2	5	7
Not stated/unknown		0	1	1
Notification source				
Metropolitan GP		2	15	17
ASHC		2	9	11
Country GP		0	2	2
Public hospital		0	3	3
Drug and alcohol services		1	1	2
Blood transfusion service		0	1	1
Other		2	1	3

Table 17 HIV-1 protease genes sequenced for subtypes, by location of infection acquisition, South Australia, 2018

Protease gene	Location acquired			Total
	South Australia	Overseas	Unknown	
B	14	2	0	**16**
C	0	2	0	**2**
CRF01_AE	1	6	0	**7**
No data	3	10	1	**14**

Table 18 HIV-1 genes sequenced for subtypes, by sex and sex of sexual contacts, South Australia, 2018

Protease gene	Male: sexual contacts				Female: sexual contacts		Total
	Females	Males	Males & females	Unknown	Males	Males & females	
B	4	10	1	0	1	0	**16**
C	2	0	0	0	0	0	**2**
CRF01_AE	2	2	0	0	3	0	**7**
No data	6	3	1	1	2	1	**14**

Table 19 HIV-1 Drug resistance mutations at the time of diagnosis, by location of infection acquistionSouth Australia, 2018

Resistance mutations	South Australia	Overseas	Total
K103N	5	1	6
K103S	1	0	1
V90I	0	1	1
M184V/M184I	1	0	1
Total	**7**	**2**	**9**

Hepatitis B (newly acquired)

There were four notifications of newly acquired (acute) hepatitis B (HBV) infection in South Australia in 2018 (Figure 10). The corresponding notification rate was 0.23 per 100,000 population, below the rate in 2017 of 0.70 per 100,000. The five year average of acute HBV notifications (2013-2017) was eight cases.

There were no notifications among members of the Aboriginal population, consistent with the low numbers in recent years. Three of the four cases in 2018 were males, similar to 2017 where 75% of cases were males. One case in 2018 was aged below 15 years, with the remainder aged over 30 years. The median age of cases in 2018 was 39.5 years (range 12 to 52 years). Two cases in 2018 were born in the Oceania and Antarctica major region (both in Australia), and two in the Southern and Central Asia major region (Table 20).

In 2018, three cases reported sexual contacts in the previous 24 months of the opposite sex (75%) and one had no sexual partners. Three cases presented to medical care with clinical signs and symptoms of acute hepatitis and one case was detected through prison screening programs. Three cases were diagnosed by metropolitan GPs and one via a prison health service. A low number of risk markers were identified by cases in 2018, including two cases for whom a risk marker was not able to be identified. Other risk markers included overseas acquisition of illness, IDU, surgery overseas and imprisonment (Table 21).

Figure 10 Number of new diagnoses of newly acquired HBV, by sex and year, South Australia, 2009 to 2018

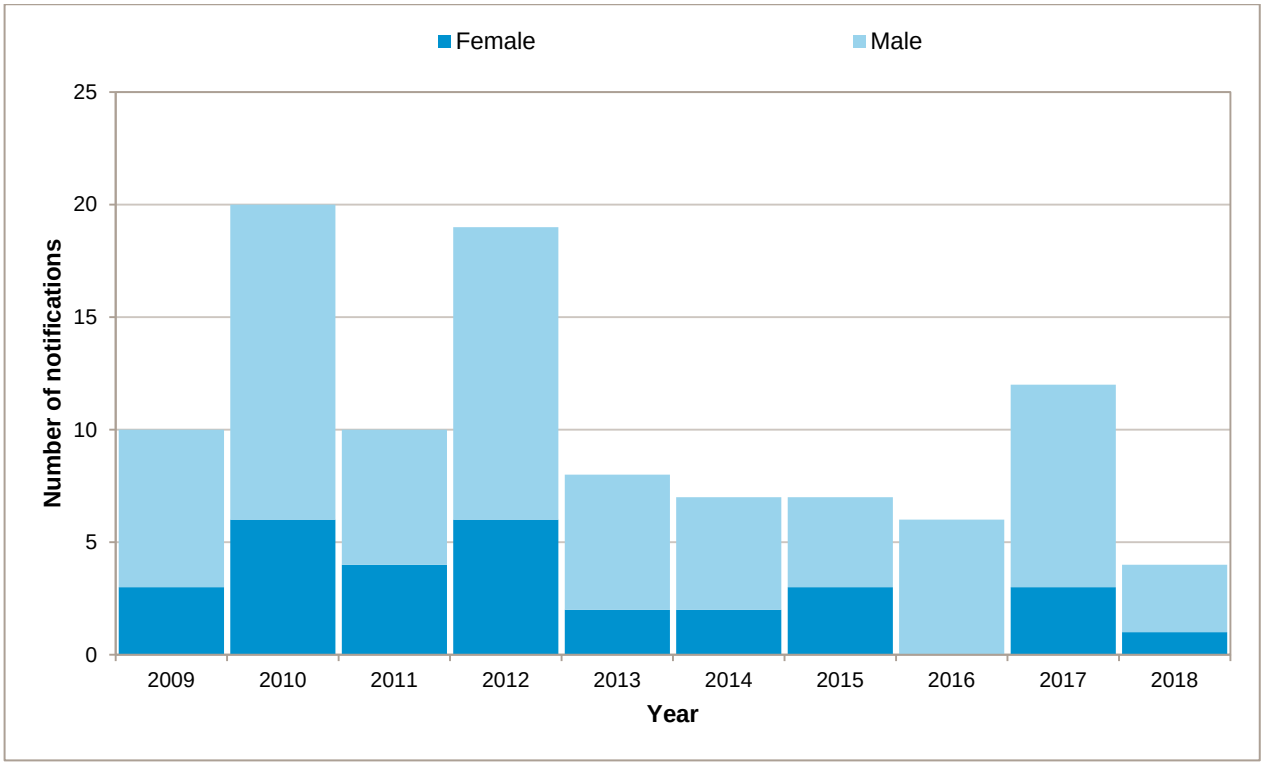


Table 20 Number of diagnoses of newly acquired HBV, by epidemiological characteristics and year, South Australia, 2014 to 2018

	Year of diagnosis				
	2014	2015	2016	2017	2018
Number of notifications	**7**	**7**	**6**	**12**	**4**
Aboriginal and Torres Strait Islander status					
Aboriginal	1	2	0	0	0
Non-Indigenous	6	5	6	12	4
Not stated	0	0	0	0	0
Sex					
Female	2	3	0	3	1
Male	5	4	6	9	3
Age-group (years)					
0-14	1	0	1	0	1
15-19	1	2	0	0	0
20-24	0	1	0	0	0
25-29	0	0	0	1	0
30-39	0	2	1	3	1
40-49	3	2	1	2	1
50-59	0	0	2	1	1
60+	2	0	1	5	0
Country of birth (by major region)					
Oceania and Antarctica	6	5	3	6	2
North-West Europe	0	1	2	3	0
Southern and Eastern Europe	0	0	0	2	0
South-East Asia	1	0	1	0	0
North-East Asia	0	0	0	1	0
Southern and Central Asia	0	1	0	0	2
Americas	0	0	0	0	0
North Africa and the Middle East	0	0	0	0	0
Sub-Saharan Africa	0	0	0	0	0
Not reported	0	0	0	0	0

Table 21 Exposure characteristics, reason for test and notification source of people diagnosed with newly acquired HBV, by sex, South Australia, 2018

		2018 notifications		
		Female	Male	Total
Number of notifications		**1**	**3**	**4**
Exposure characteristics				
Sexual partners in last 24 months	Female	0	2	2
	Male	1	0	1
	No sexual contact	0	1	1
*Risk markers**	Surgical procedure overseas	0	1	1
	Injecting drug use	1	0	1
	Overseas acquired	0	2	2
	Imprisonment	1	0	0
	Risk not able to be determined	0	2	2
Reason for test				
Investigation of symptomatic hepatitis		0	3	3
Prison screen		1	1	1
Notification source				
Metropolitan GP		0	3	3
Prison health service		1	0	1

* more than one risk marker may be recorded per case.

Hepatitis B (unspecified)

There were 254 notifications of hepatitis B (HBV) infections of unspecified duration in South Australia in 2018 (Figure 11), a decrease compared to 291 cases in 2017 and the five year average of 325 cases per year (2013-2017)[†].

The notification rate for all unspecified HBV cases in 2018 was 14.63 per 100,000 population. The notification rate in the Aboriginal population in 2018 decreased to 9.2 per 100,000 population, below that of the non-Indigenous population at 14.4 per 100, 000, and a decrease over time since 2014 (note the sharp decline in 2015 compared to 2014 could be due to a change in surveillance practices). The rate in the non-Indigenous population has shown a decline over the previous five years (Figure 12).

Cases were evenly split between males and females (50% male; 127/254), similar to previous years. Four notifications were among members of the Aboriginal population, two of whom were residents of rural regions of South Australia and two from the metropolitan Adelaide region. In 2018, 70% of cases were over 30 years of age, consistent with previous years. The median age of non-Indigenous cases was 36 years (range 5 to 88 years) and for Indigenous cases was 73 years (range 56 to 80 years). The most frequently reported major region for the country of birth of cases notified in 2018 was South-East Asia (37%; 94/254), followed by North-East Asia (28%; 72/254). Twenty-three cases (9%) in 2018 were born in the Oceania and Antarctica major region (14 born in Australia), similar to 22 cases (8%) in 2017 (Table 20).

In 2018, 116 cases (46%) were reported as being acquired overseas, and 129 (51%) did not have a location of acquisition recorded. People diagnosed with unspecified HBV were more likely to report sexual partners of the opposite sex (64/127; 50% of males and 82/127; 65% of females) than the same sex. Only six cases (2%) were reported as locally acquired in South Australia. A wide range of risk markers were reported by unspecified HBV cases in 2018, 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. Risk markers were not recorded or the risk of illness was not able to be determined for 64 cases (25%). Some common risk markers were perinatal transmission (19%; 49/254) and household contact with a known case of HBV (17%; 43/254), this was consistent with 2017. The most common reasons for HBV testing amongst unspecified HBV cases in 2018 was migrant screening (20%; 51/254), monitoring or health checks for known cases (11%; 27/254), antenatal screening (10%; 25/254) and abnormal liver function tests (7%; 19/254) (Table 23).

Cases were most commonly notified by metropolitan GPs (62%; 158/254), public hospitals (11%; 27/254) and migrant health services (8%; 20/254) (Table 24).

[†] 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. 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.

Figure 11 Number of new diagnoses of unspecified HBV, by sex and year, South Australia, 2009 to 2018

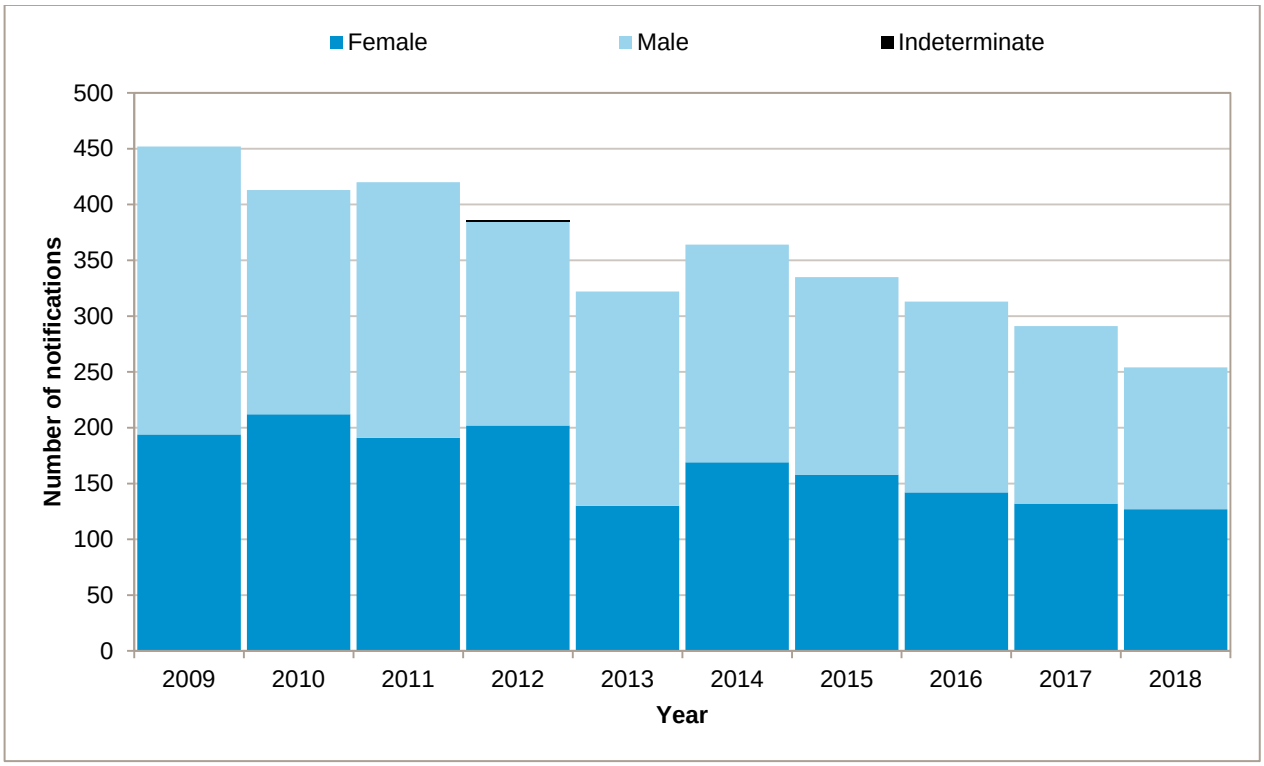


Figure 12 Unspecified HBV notification rate per 100,000 population, by Aboriginal status and year, South Australia, 2014 to 2018

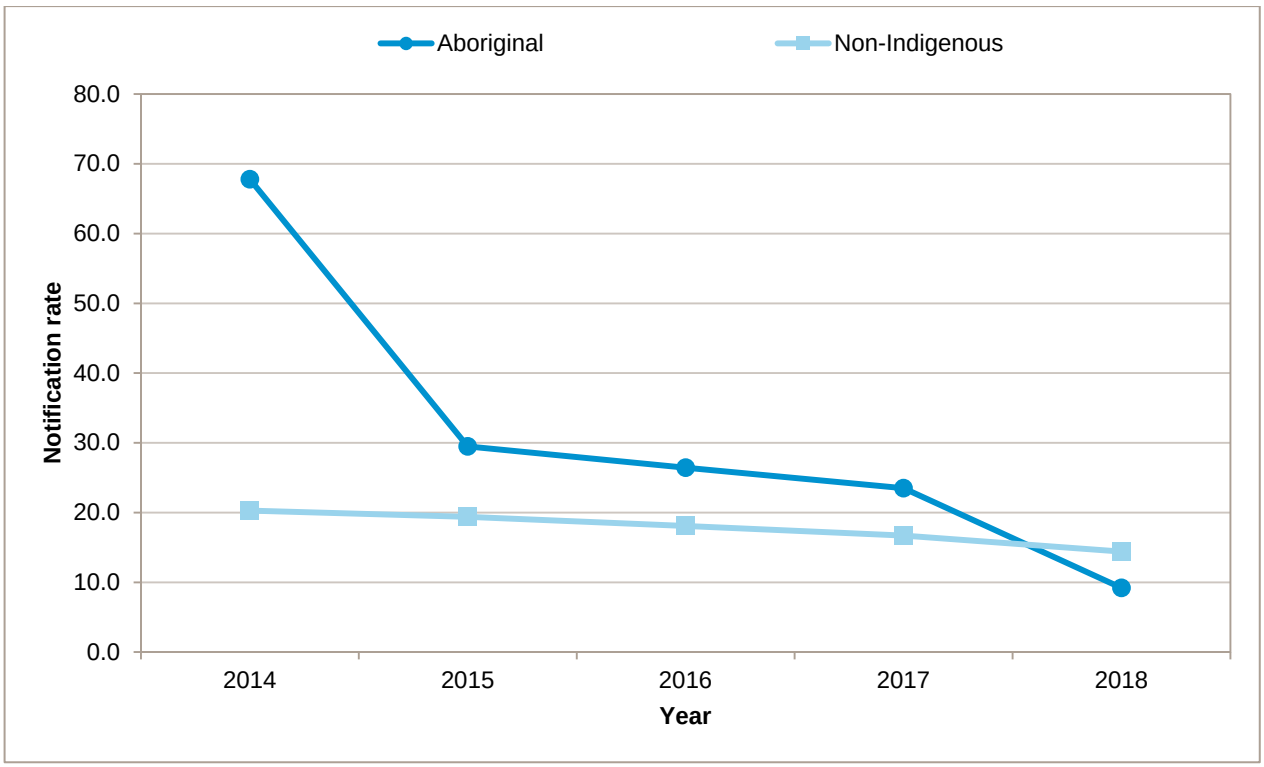


Table 22 Number of diagnoses of unspecified HBV, by epidemiological characteristics and year, South Australia, 2014 to 2018

	Year of diagnosis				
	2014	2015	2016	2017	2018
Number of notifications	**364**	**335**	**313**	**291**	**254**
Aboriginal and Torres Strait Islander status					
Aboriginal	27	12	11	10	4
Non-Indigenous	334	322	302	281	244
Not stated	3	1	0	0	6
Sex					
Female	169	158	142	132	127
Male	195	177	171	159	127
Age-group (years)					
0-14	5	1	10	5	3
15-19	17	12	18	10	13
20-24	39	27	23	25	33
25-29	48	57	34	38	26
30-39	114	99	100	90	72
40-49	60	60	67	50	48
50-59	44	42	29	29	30
60+	37	37	32	44	29
Country of birth (by major region)					
Oceania and Antarctica	50	37	34	22	23
North-West Europe	3	4	0	2	1
Southern and Eastern Europe	15	19	14	11	6
South-East Asia	118	104	98	96	94
North-East Asia	77	94	82	84	72
Southern and Central Asia	35	32	32	29	22
Americas	1	3	0	1	0
North Africa and the Middle East	20	17	21	12	9
Sub-Saharan Africa	31	20	25	25	17
Not reported	14	5	7	9	10

Table 23 Exposure characteristics, reason for test and notification source of people diagnosed with unspecified HBV, by sex, South Australia, 2018

		2018 notifications		
		Female	Male	Total
Number of notifications		**127**	**127**	**254**
Exposure characteristics				
Sexual partners in last 24 months	Female	4	64	68
	Male	82	5	87
	No sexual contact	14	10	24
	Unknown/missing	27	48	75
Location of infection acquisition	South Australia	3	3	6
	Interstate	1	2	3
	Overseas	61	55	116
	Unknown/not recorded	62	67	129
*Risk markers**	Perinatal	26	23	49
	Household contact with known HBV	27	16	43
	Ear or body piercing	20	5	25
	Tattooing	4	9	13
	Injecting drug use	1	6	7
	Sexual partner of opposite sex with known HBV	4	2	6
	Sexual partner of same sex with known HBV	1	1	2
	Blood/blood products/tissues overseas	5	1	6
	Needlestick/biohazard/occupational injury in non-HCW	2	2	4
	Acupuncture	2	1	3
	Non-occupational or unspecified injury	0	2	2
	Blood/blood products/tissues Australia	1	1	2
	Imprisonment	0	2	2
	HCW no documented exposure	1	0	1
	Other	3	4	7
	Risk not able to be determined	11	11	22
	Not recorded	19	23	42
Reason for test				
Migrant screen		21	30	51
Known case - monitoring/check		13	14	27
Antenatal screen		22	3	25
Abnormal liver function tests		8	11	19
Patient request		12	5	17
STI screen		6	11	17
Screen for other purposes		10	5	15
BBV screen		5	6	11
Occupational screen		2	3	5
Investigation of symptomatic hepatitis		4	0	4
Perioperative		0	3	3
Prison screen		0	3	3
Blood or organ donor screen		0	1	1
Other		5	7	12
Unknown (not recorded)		19	25	44

* More than one risk marker may be recorded per case. Reporting a risk marker does not necessarily imply source of infection.

Table 24 Notification source of people diagnosed with unspecified HBV, by sex South Australia, 2018

	2018 notifications		
	Female	Male	Total
Notification source			
Metropolitan GP	82	76	158
Public hospital	13	14	27
Migrant health services	10	10	20
Country GP	8	5	13
ASHC	0	2	2
Prison health service	0	2	2
Aboriginal health services	2	0	2
Blood transfusion service	1	1	2
SHine SA	0	1	1
Other	8	9	17
Unknown	3	7	10

Hepatitis C (newly acquired)

There were 41 notifications of newly acquired (acute) hepatitis C (HCV) infection in South Australia in 2018 (Figure 13), a decrease compared to the five year average (2013-2017) of 46 notifications.

The corresponding notification rate was 2.4 per 100,000 population, a small increase from the rate in 2017 of 1.86 per 100,000 population. Fourteen notifications were in people identifying as Aboriginal with a corresponding rate of 32.2 per 100,000 in 2018, compared to a rate of 1.6 per 100,000 population in non-Indigenous cases. Figure 14 demonstrates the higher notification rates in the Aboriginal population compared to the non-Indigenous population from 2014 to 2018, but noting the small population meaning small changes in case numbers per year can result in large notification rate changes.

The median age of Aboriginal cases was 29.5 years (range 18-37 years) compared to 35 years (range 0-76 years) in the non-Indigenous population. In 2018, 61% of the notifications were in males (25/41), and 66% (27/41) were among people aged 30 years and over. The median age of all cases in 2018 was 32 years (range 0-76 years) compared to a median of 38 years in 2017. In 2018 there was one case diagnosed in a 10 month old child due to perinatal transmission. The child's mother was not engaged with the health care system during her pregnancy. Eight of the notifications in Aboriginal people were residents of metropolitan Adelaide at the time of diagnosis. Consistent with previous years, the majority of cases (37/41; 90%) were born in the major region of Oceania and Antarctica, all of whom were born in Australia (Table 25).

In 2018, the most commonly reported risk marker was IDU within the previous 2 years, reported by 30 of the 41 cases (73%). This is lower than the 97% of cases reporting IDU in 2017. In 2018, a further four cases reported a history of IDU, but not within the previous 2 years, therefore a total of 34 or 83% of cases reported a history of IDU. Four cases reported never injecting drugs, and information was unknown for three cases in 2018. Other common risk markers identified were imprisonment (16/41; 39%), tattooing (10/41; 24%), sexual partner of opposite sex with known HCV infection (8/41; 20%) and occupational and non-occupational needlestick or biohazard injuries in non-healthcare workers (8/41; 20%). Please note that individual cases may have reported more than one risk exposure category and that exposure does not necessarily imply the source of infection (Table 26).

The most common reasons for HCV testing were reported as prison screening (10/41; 24%), STI/BBV screening (9/41; 22%), abnormal liver function tests (5/41; 12%) and contact of a confirmed case (5/41; 12%, including one perinatal transmission case). Metropolitan GPs were the most common notifying source (14/41; 34%) followed by prison health services (12/41; 29%) and public hospitals (10/41; 24%) (Table 26).

Figure 13 Number of new diagnoses of newly acquired HCV, by sex and year, South Australia, 2009 to 2018

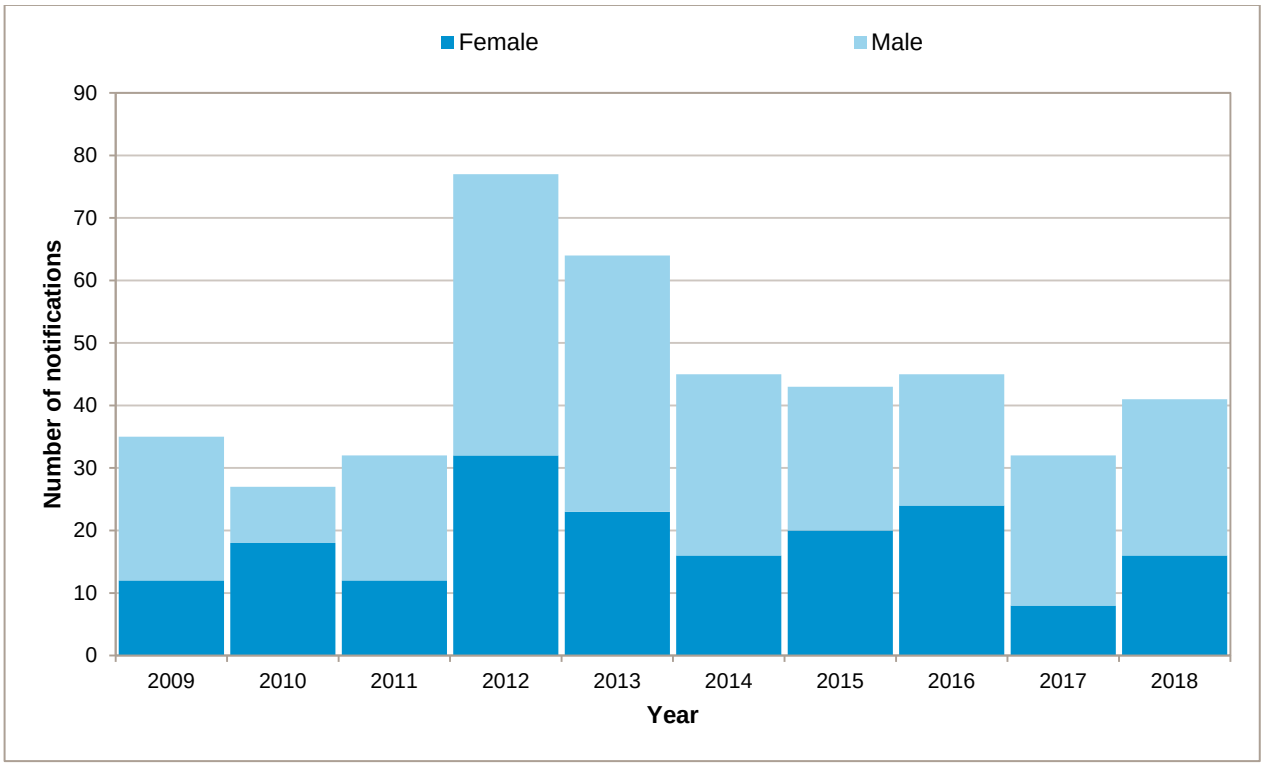


Figure 14 Newly acquired HCV notification rate per 100,000 population, by Aboriginal status and year, South Australia, 2014 to 2018

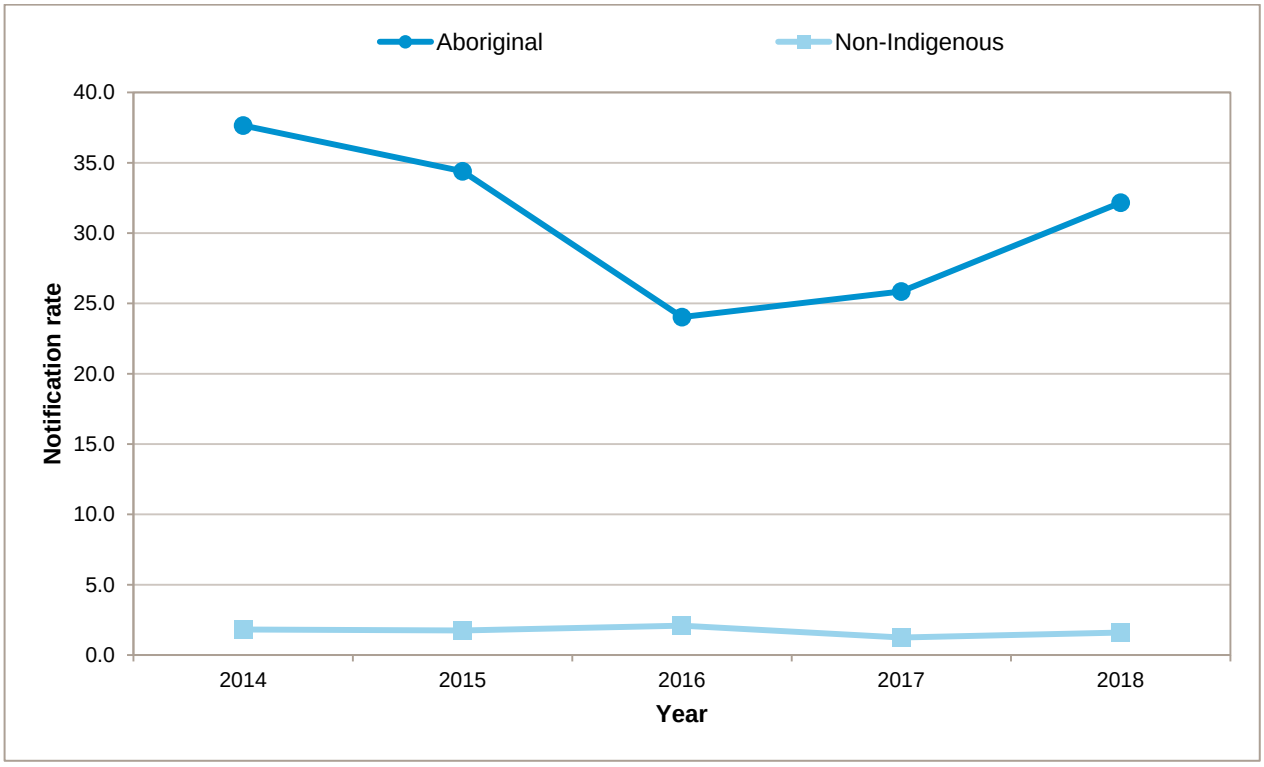


Table 25 Number of diagnoses of newly acquired HCV, by epidemiological characteristics and year, South Australia, 2014 to 2018

	Year of diagnosis				
	2014	2015	2016	2017	2018
Number of notifications	**45**	**43**	**45**	**32**	**41**
Aboriginal and Torres Strait Islander status					
Aboriginal	15	14	10	11	14
Non-Indigenous	30	29	35	21	26
Not stated	0	0	0	0	0
Sex					
Female	16	20	24	8	16
Male	29	23	21	24	25
Age-group (years)					
0-14	0	0	0	0	1
15-19	3	1	2	0	2
20-24	5	8	8	1	4
25-29	9	7	4	6	7
30-39	14	14	9	11	16
40-49	9	10	13	11	9
50-59	4	3	9	3	1
60+	1	0	0	0	1
Country of birth (by major region)					
Oceania and Antarctica	40	41	42	30	37
North-West Europe	2	1	0	0	1
Southern and Eastern Europe	0	0	0	0	0
South-East Asia	0	0	1	0	0
North-East Asia	0	0	0	0	0
Southern and Central Asia	0	0	0	0	1
Americas	0	0	0	0	0
North Africa and the Middle East	0	0	0	0	0
Sub-Saharan Africa	0	0	0	0	0
Not reported	3	1	2	2	2

Table 26 Risk markers, reason for test and notification source of people diagnosed with newly acquired HCV, by sex, South Australia, 2018

	2018 notifications		
	Female	Male	Total
Number of notifications	**16**	**25**	**41**
Risk markers			
Injecting drug use within previous 2 years	11	19	30
Injecting drug use not within previous 2 years	2	2	4
Imprisonment	3	13	16
Tattooing	0	10	10
Sexual partner of opposite sex with known HCV	6	2	8
Non-occupational or unspecified needlestick/biohazard injury	4	4	8
Household contact with known HCV	1	4	5
Ear or body piercing	0	3	3
Sexual partner of same sex with known HCV	0	1	1
Acupuncture	0	1	1
Perinatal transmission	0	1	1
Reason for test			
Prison screening	3	7	10
STI/BBV screening	5	4	9
Abnormal liver function tests	1	4	5
Contact of confirmed case	0	5	5
Investigation of symptomatic hepatitis	1	2	3
Antenatal screen	2	0	2
Patient request	1	0	1
Other	1	0	1
Unknown/not recorded	2	3	5
Notification source			
Metropolitan GP	6	8	14
Prison health services	3	9	12
Public hospital	3	7	10
Country GP	2	1	3
Aboriginal health services	1	0	1
Unknown	1	0	1

* More than one risk marker may be recorded per case. Reporting a risk marker does not necessarily imply source of infection.

Hepatitis C (unspecified)

There were 385 notifications of hepatitis C (HCV) infections of unspecified duration in South Australia in 2018, a decrease compared to the five year average (2013-2017) of 503.4 infections per year[‡] (Figure 15).

The corresponding notification rate was 22.2 per 100,000 population in 2018, a small decrease from the rate of 27 per 100,000 population in 2017. Forty-five notifications were among members of the Aboriginal population, 24 (53%) of whom were residents of metropolitan Adelaide, with 18 (40%) from rural regions and three unknown. Figure 16 demonstrates the higher notification rates in the Aboriginal population compared to the non-Indigenous population from 2014 to 2018, with a rate of 103.4 per 100,000 population in the Aboriginal population and 19.4 per 100,000 population in the non-Indigenous population in 2018.

In 2018, consistent with previous years, 66% (255/385) of notifications were in males and 90% (346/385) of the notifications were among people aged 30 years and over. The majority of cases (247/385; 64%) were born in the Oceania and Antarctica major region, including 242 who were Australian born (Table 27).

Table 28 outlines the identified risk markers and reasons for testing for unspecified HCV notifications in 2018, by sex. The most commonly reported risk marker was IDU (244/385; 63%), followed by tattoos (112/385; 29%) and imprisonment (72/385; 19%). Multiple other risk exposures are listed in the table, noting that people can report more than one risk for their infection. The most common reason for testing was abnormal liver function tests (67/385; 17%), followed by multiple types of screening tests including STI/BBV screening (60/385; 16%), prison screening (40/385; 10%), and unspecified screens (26/385; 7%).

The majority of cases were notified by metropolitan (150/385; 39%) and country GPs (68/385; 18%), followed by public hospitals (60/385; 16%) and prison health services (42/385; 11%) (Table 29).

[‡] Hepatitis C surveillance data was transferred to a new database in early 2019 and data were 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 are 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. There is also a backlog of laboratory reports for PCR results that may result in a change in case numbers.

Figure 15 Number of new diagnoses of unspecified HCV, by sex and year, South Australia, 2009 to 2018

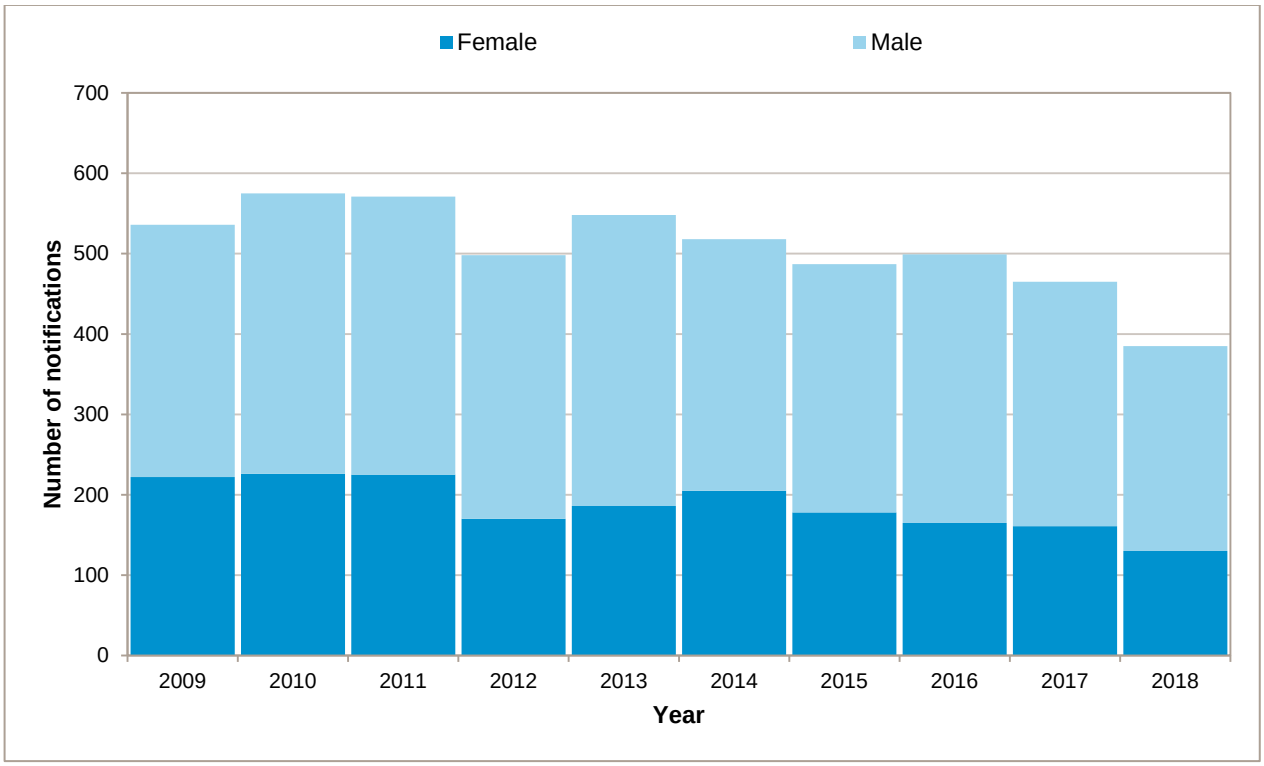


Figure 16 Unspecified HCV notification rate per 100,000 population, by Aboriginal status and year, South Australia, 2014 to 2018

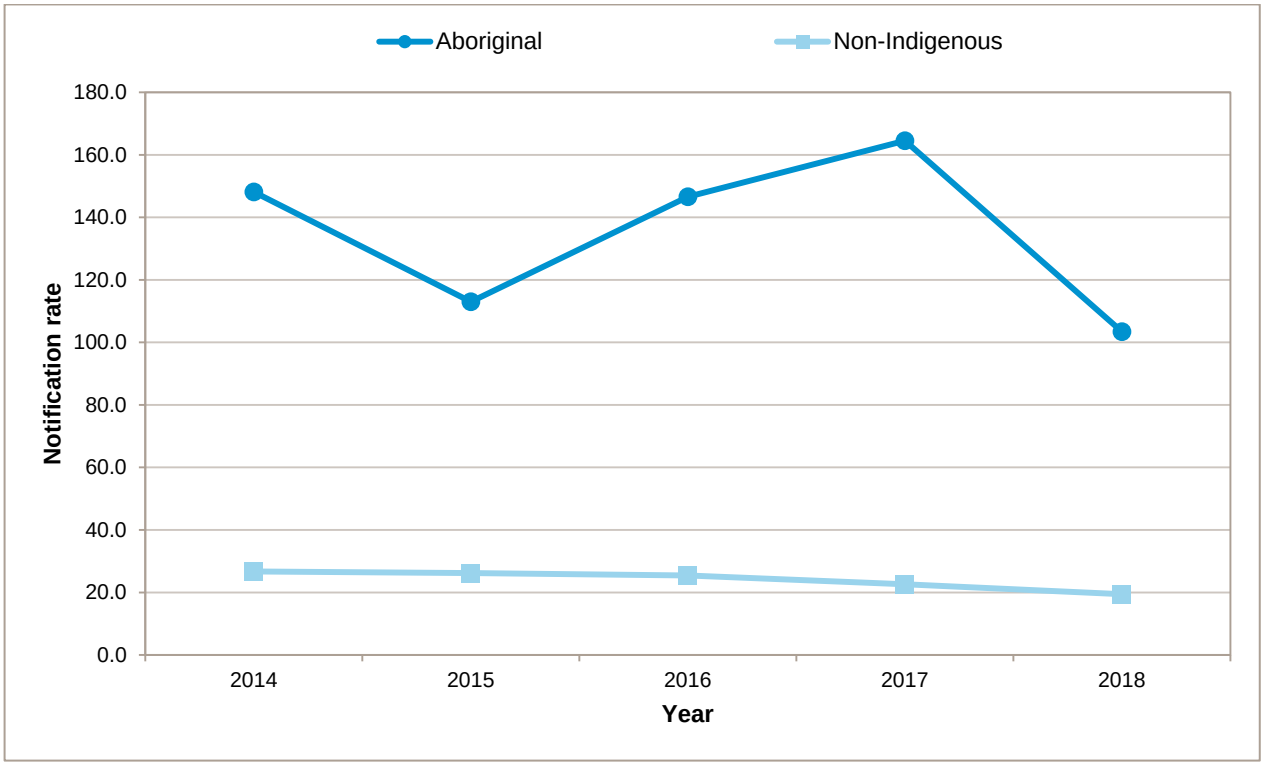


Table 27 Number of diagnoses of unspecified HCV, by epidemiological characteristics and year, South Australia, 2014 to 2018

	Year of diagnosis				
	2014	2015	2016	2017	2018
Number of notifications	**518**	**487**	**499**	**465**	**385**
Aboriginal and Torres Strait Islander status					
Aboriginal	59	46	61	70	45
Non-Indigenous	440	435	425	380	329
Not stated	19	6	13	15	11
Sex					
Female	205	178	165	161	130
Male	313	309	334	304	255
Age-group (years)					
0-14	3	1	3	0	0
15-19	8	5	7	4	7
20-24	17	16	21	24	10
25-29	44	37	38	39	22
30-39	142	131	122	115	93
40-49	136	131	122	119	97
50-59	116	123	133	115	98
60+	51	43	53	49	58
Missing	1	0	0	0	0
Country of birth (by major region)					
Oceania and Antarctica	360	363	345	328	247
North-West Europe	17	13	10	12	19
Southern and Eastern Europe	19	9	14	10	10
South-East Asia	20	21	25	21	21
North-East Asia	9	5	7	1	9
Southern and Central Asia	21	23	13	22	15
Americas	2	3	2	0	0
North Africa and the Middle East	8	6	8	7	2
Sub-Saharan Africa	3	3	5	6	2
Not reported	59	41	70	58	60

Table 28 Exposure characteristics, reason for test and notification source of people diagnosed with unspecified HCV, by sex, South Australia, 2018

	2018 notifications		
	Female	Male	Total
Number of notifications	**130**	**255**	**385**
Risk markers*			
Injecting drug use	72	172	244
Tattoos	28	84	112
Imprisonment	10	62	72
Ear or body piercing	30	36	66
Sexual partner of opposite sex with known HCV	16	19	35
Household contact with known HCV	16	18	34
Needlestick/biohazard injury non-HCW	4	18	22
Blood/blood products/tissues in Australia	7	9	16
Acupuncture	4	11	15
Blood/blood products/tissues overseas	7	2	9
Non-occupational or unspecified injury	2	7	9
Overseas acquired	5	2	7
Needlestick/biohazard injury HCW	3	1	4
Perinatal	2	2	4
Sexual partner of same sex with known HCV	1	2	3
HCW with no exposure	1	1	2
Risk not able to be determined	1	0	1
Unknown	20	32	52
Reason for test			
Abnormal liver function tests	23	44	67
STI/BBV screen	18	42	60
Prison screening	4	36	40
Screen for other reason	16	10	26
Patient request	7	16	23
Drug/alcohol screen	5	9	14
Migrant health screen	2	8	10
Antenatal screening	10	0	10
Contact of a case	1	7	8
Perioperative	4	3	7
Treatment screen	5	2	7
Investigation of symptomatic hepatitis	2	4	6
Injecting drug user screen	3	3	6
Blood or organ donor screen	1	2	3
Unknown/not stated	23	40	63
Other	23	12	35

* More than one risk marker may be recorded per case. Reporting a risk marker does not necessarily imply source of infection.

Table 29 Notification source of people diagnosed with unspecified HCV, by sex, South Australia, 2018

Notification source	2018 notifications		
	Female	Male	Total
Metropolitan GP	63	87	150
Country GP	21	47	68
Public hospital	20	40	60
Prison health service	5	37	42
Drug and alcohol services	5	7	12
Sexual health services	2	4	6
Blood transfusion service	1	2	3
Aboriginal health services	0	3	3
Private hospital	1	2	3
Mental health service	1	1	2
Interstate public health unit	0	1	1
Other	6	12	18
Unknown	5	12	17

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 2018, there were five new diagnoses of HDV infection notified in South Australia, below the five year average (2013-2017) of 10 notifications per year. Notifications in 2018 were in three males and two females (Figure 17). The notification rate of HDV in South Australia was 0.3 per 100,000 population in 2018, a reduction from the previous four years (Figure 18).

In 2018, no one diagnosed with HDV identified as Aboriginal, with all cases born in countries outside of Australia. The median age of cases notified in 2018 was 24 years (range 19 to 36 years). Notifications came from diagnosing doctors in public hospitals (three cases), a metropolitan GP (one case) and a migrant health service (one case). All cases had residential addresses in the metropolitan Adelaide region at the time of their diagnosis (Table 30).

Table 30: Number of diagnoses of HDV, by epidemiological characteristics and year, South Australia, 2014 to 2018

	Year of diagnosis				
	2014	2015	2016	2017	2018
Number of notifications	**9**	**9**	**9**	**10**	**5**
Aboriginal and Torres Strait Islander status					
Aboriginal	0	0	0	1	0
Non-Indigenous	9	9	9	9	5
Sex					
Female	6	4	3	4	2
Male	3	5	6	6	3
Age-group (years)					
0-14	0	0	0	0	0
15-19	0	1	0	0	1
20-24	1	0	2	2	2
25-29	4	1	0	1	0
30-39	2	4	1	4	2
40-49	0	2	1	2	0
50-59	1	1	3	1	0
60+	1	0	2	0	0
Country of birth (by major region)					
Oceania and Antarctica	0	1	2	1	0
North-West Europe	0	0	0	0	0
Southern and Eastern Europe	1	0	1	0	0
South-East Asia	1	2	2	2	1
North-East Asia	1	0	1	0	0
Southern and Central Asia	1	2	2	2	1
Americas	0	0	0	0	0
North Africa and the Middle East	2	1	0	3	0
Sub-Saharan Africa	3	1	1	2	3
Not reported	0	2	0	0	0

Figure 17: Number of new diagnoses of HDV in South Australia by sex and year, 2009 to 2018

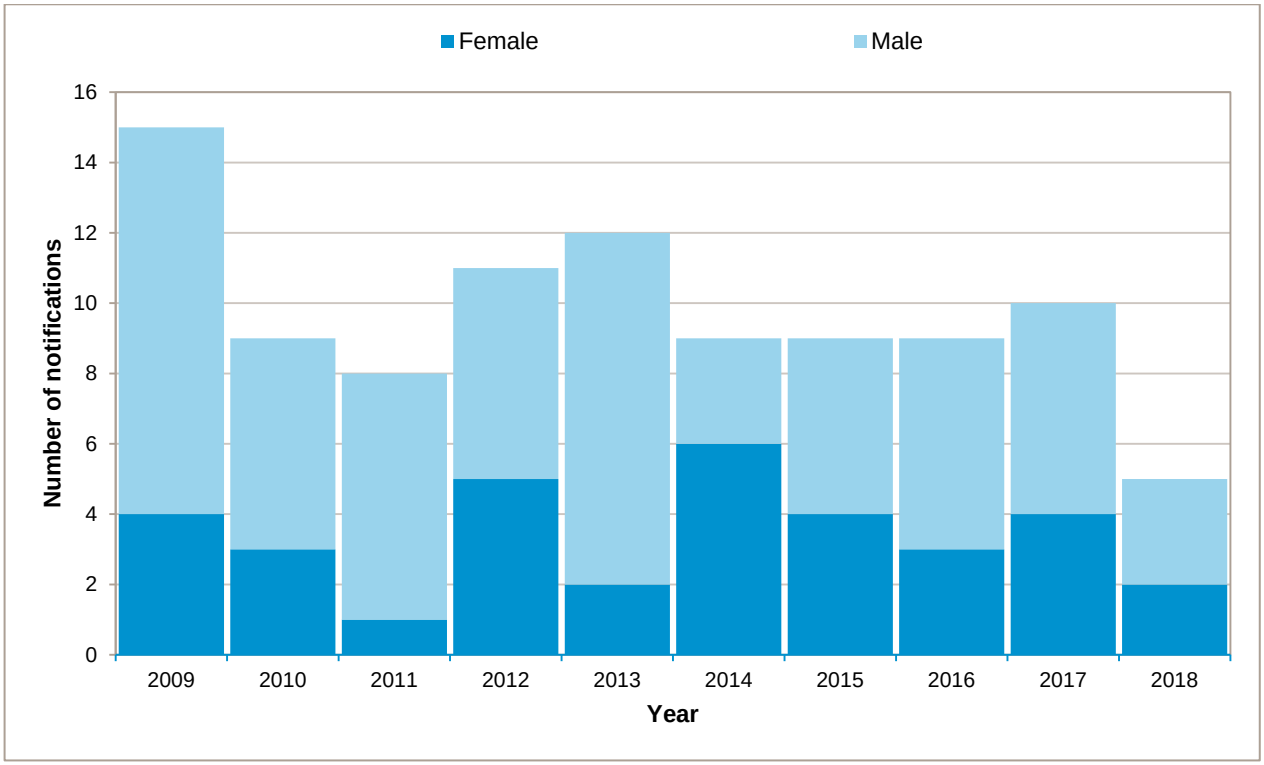
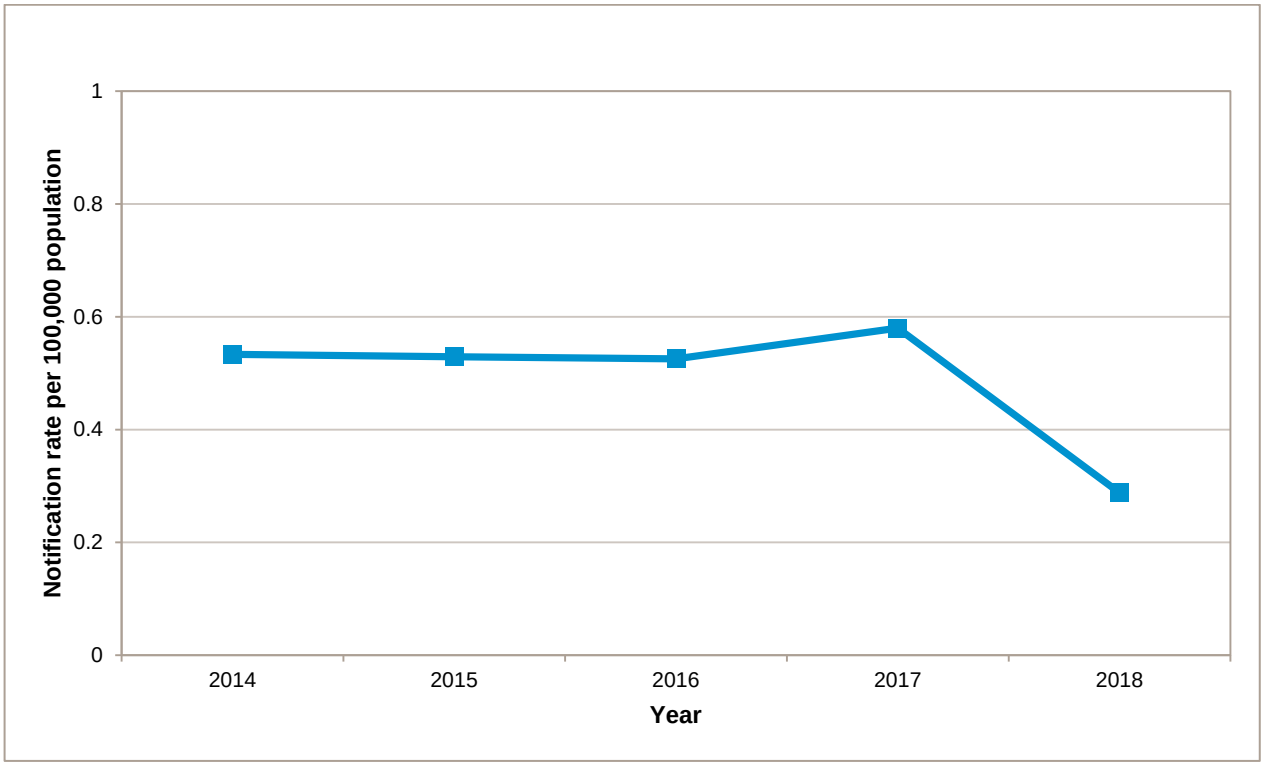


Figure 18: HDV notification rate per 100,000 population, by year, South Australia, 2014 to 2018



For more information

Communicable Disease Control Branch
Health Regulation and Protection
PO BOX 6
RUNDLE MALL SA 5000
Telephone: 1300 232 272
www.sahealth.sa.gov.au

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