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# Surveillance of sexually transmitted infections and blood-borne viruses in South Australia, 2017

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 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.

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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
BBVs	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)
STIs	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 2017, as reported at 30 March 2018. 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 transmitted infections (STIs) and blood borne viruses (BBVs) 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 STIs and BBVs 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 obtained from the 2016 Census data published by the Australian Bureau of Statistics (ABS). Infection rates for Aboriginal and Torres Strait Islander populations were also calculated using denominator population data as published by the ABS. In 2017, 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 (Second Edition) was used to categorise country and regions of birth.

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



## Main findings

In 2017, there were 8,181 new notifications of STIs and BBVs in South Australia (Table 1). This figure represents a 7% increase in the number of new notifications compared to notifications received in 2016, and a 14% increase compared to the five year average (2012-2016).

In 2017, there were 5,910 notifications of genital chlamydia making this the most commonly notified STI in South Australia (Table 1). The notification rate of chlamydia in 2017 was 343 per 100,000 population, and has been stable over the past five years. In 2017, the notification rate in the Aboriginal population was 832 per 100,000 population. The demographics of people diagnosed with chlamydia have remained relatively stable over the past five years. In 2017, 55% 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 (75%).

There were no notifications of donovanosis in 2017.

There were 1,271 notifications of gonorrhoea in 2017. The notification rate of gonorrhoea increased from 45 per 100,000 population in 2014 to 74 per 100,000 population in 2017. The rate in the Aboriginal population was 596 per 100,000 population in 2017 compared to 59 per 100,000 population in the non-Indigenous population. Males diagnosed with gonorrhoea in 2017 were almost equally likely to report sexual contact with males (42%) as with females (45%), whereas females were most likely to report sexual contact with males (85%).

There were 158 notifications of infectious syphilis in 2017, the highest number of annual notifications in the past 10 years. The notification rate of infectious syphilis in 2017 was 9.2 per 100,000 population, almost double the rate in 2016 of 5.1 per 100,000 population. The majority of male syphilis notifications were among MSM (82%) and the majority of notifications in females reported heterosexual contact (96%). Syphilis notifications in the Aboriginal population rose to 70 per 100,000 in 2017, compared to 26.4 per 100,000 in 2016. The first South Australian case of congenital syphilis since 1999 was notified in 2017.

There were 60 new diagnoses of HIV infection in 2017. The notification rate of newly diagnosed HIV infection in 2017 was 3.5 per 100,000 population, above that in 2016 of 3.1 per 100,000 population. The notification rate in the Aboriginal population rose to 9.6 per 100,000 in 2017, up from 4.8 per 100,000 in 2016. Fifty-two of the 60 notifications were in males. In 2017, 71% of male cases identified as MSM, compared to 2016 where 86% identified as MSM. Eighteen of these males reported acquiring their infection in South Australia. All eight females notified in 2017 identified as heterosexual, and four reported their acquisition of infection in South Australia. Fifty percent of cases notified in 2017 were born in Australia (30/60) and 17% were born in the North Africa and Middle East (10/60) major region. Consistent with previous years, subtype B remains the predominant circulating strain in South Australia. One case acquired in South Australia in 2017 had multiple resistance mutations.

There were 11 notifications of newly acquired hepatitis B infection in 2017, above the five year average (2012-2016) of nine cases per year. There were no notifications in the Aboriginal population, and cases continued to be predominantly notified in males, at 73%. Cases were most likely to be Australian born (55%).

There were 272 notifications of unspecified hepatitis B virus infection reported in 2017. The notification rate has declined in the Aboriginal population over the past five years from a peak of 40 per 100,000 in 2014 down to 14.4 per 100,000 in 2017. The notification rate in the non-Indigenous population in 2017 was 15.8 per 100,000. Ninety-seven per cent of cases were born outside of

Australia, predominantly in South East Asia and North East Asia. Risk markers were largely unknown for cases, and migrant and antenatal screens were the most common reasons for testing.

There were 32 notifications of newly acquired hepatitis C in 2017. The majority of cases were males (75%). The majority of cases were aged over 30 years (75%). The notification rate of newly acquired hepatitis C cases in the Aboriginal population was 26.4 per 100,000 compared to 1.3 per 100,000 in the non-Indigenous population. All cases with a country of birth listed were born in the major region of Oceania and Antarctica, 91% of whom were born in Australia. The most commonly reported risk marker was injecting drug use (97%), followed by tattooing (34%).

The notification rate of unspecified hepatitis C infection was 23 per 100,000 population in 2017. In 2017, 85% of notifications were for persons aged over 30 years and 68% of notifications documented a current or past history of injecting drug use. Seventy per cent of notifications were for persons born in the Oceania and Antarctica region, 69% of whom were born in Australia. Consistent with previous years, the notification rate in the Aboriginal population was higher, at 141.8 per 100,000, than in the non-Indigenous population at 19.2 per 100,000.

There were 10 new diagnoses of hepatitis D infection in 2017, which is consistent with the five year average of 10 notifications per year.

**Table 1 Notifications of STIs & BBVs in South Australia, 2012 to 2017**

Disease	2012	2013	2014	2015	2016	Five year average (2012-2016)	2017
Chlamydia	5,126	5,601	5,550	5,454	5,483	5,443	5,910
Gonorrhoea	549	820	750	813	1,110	808	1,271
Donovanosis	0	0	0	1	0	0.2	0
Syphilis (infectious)	46	43	29	69	88	55	158
Syphilis (unspecified)	NA	113	120	124	57	104*	60
Human immunodeficiency virus	43	69	54	57	53	55	60
Hepatitis B (newly acquired)	17	8	7	7	6	9	11
Hepatitis B (unspecified)	337	293	325	340	289	317	272
Hepatitis C (newly acquired)	78	61	45	44	44	54	32
Hepatitis C (unspecified)	434	466	449	461	482	458	397
Hepatitis D	11	12	9	9	9	10	10
<b>TOTAL</b>	<b>6,641</b>	<b>7,486</b>	<b>7,338</b>	<b>7,379</b>	<b>7,621</b>	<b>7,209</b>	<b>8,181</b>

NA = Not available; \* =Four year average 2013 to 2016 only as data not available for 2012.

## Chlamydia trachomatis

In 2017, *Chlamydia trachomatis* (chlamydia) was the most frequently reported STI in South Australia, consistent with previous years (Table 1).

There were 5,910 notifications of chlamydia in South Australia in 2017, an increase compared to 2016 (5,483) (Table 2), and the five year average (2012-2016) of 5,443 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 2017 was 343 per 100,000 population, consistent with the rate in 2016 of 321 per 100,000 population. There were 346 notifications in 2017 in people who identified as Aboriginal. The notification rate in the Aboriginal population in 2017 was 832 per 100,000 population, consistent with the rate in 2016 of 846 per 100,000 population. Rates of notification from 2013 to 2017 were consistently higher in the Aboriginal population compared to the non-Indigenous population (Figure 2).

Fifty-five per cent of notifications in 2017 were in females (3,225). Notifications were most common in people aged 15 to 29 years (4,557; 77%). The median age of non-Indigenous cases in 2017 was 24 years, compared to 22 years for Aboriginal cases. In 2017, the majority of non-Indigenous cases were living in metropolitan South Australia at the time of diagnosis (4,140; 82%), and approximately half (161; 47%) of the cases identifying as Aboriginal were from metropolitan areas. Seventy-five percent of cases in 2017 were born in the major region of Oceania and Antarctica (4,458), with 4,416 of the cases born in Australia. South East Asia and Sub Saharan Africa (128; 2% each) were the next most common major regions for country of birth for cases in 2017 (Table 2).

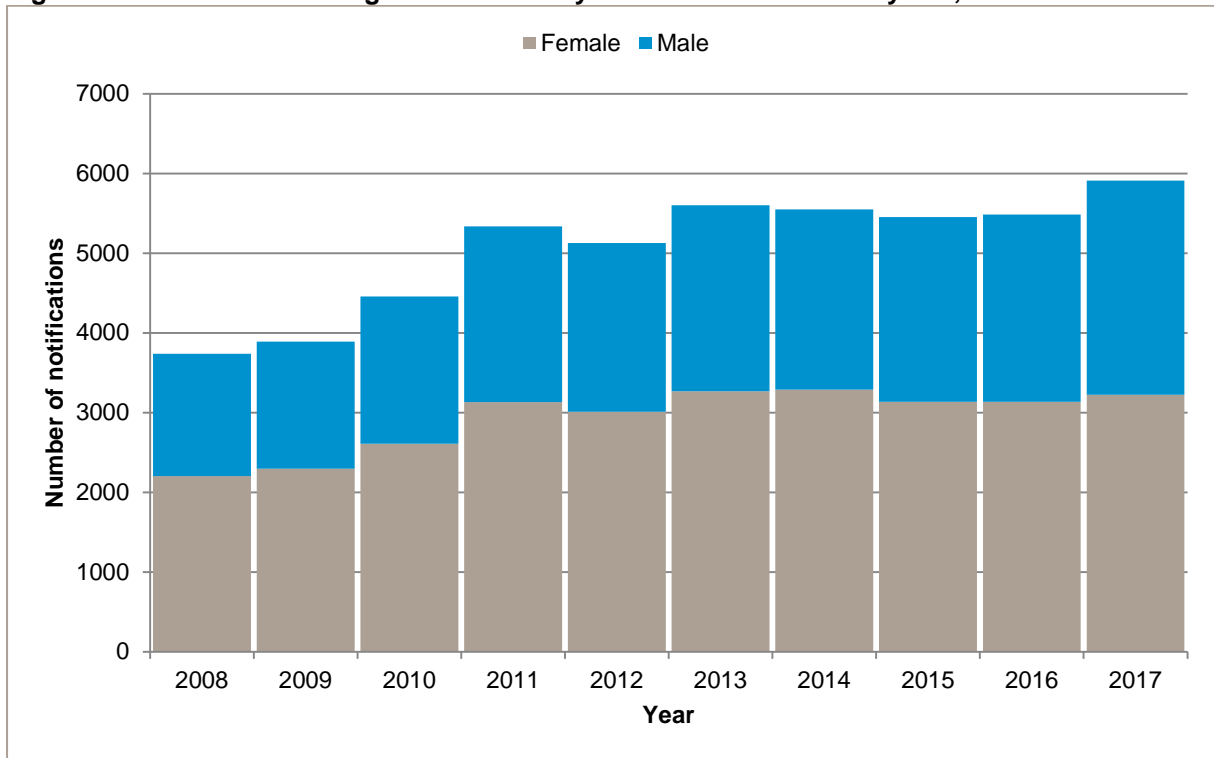
Persons infected with chlamydia were most likely to be heterosexual (2,771 females and 1,843 males; 78%) and report acquiring their infection in South Australia (5,008; 85%). Sexual contact with sex workers was reported by 59 cases (12 females and 47 males) and 39 persons (30 females and 9 males) reported working as a sex worker (Table 3).

The most commonly cited reason for ordering a diagnostic test were clinical presentation with symptoms (1,876; 32%), STI screening (1,724; 29%) and being a contact of a person infected with chlamydia (1,209; 21%). General practitioners located in metropolitan Adelaide were the most frequent notifiers (2,787; 47%), followed by the specialist sexual health service Clinic 275 (942; 16%) and country general practitioners (767; 13%) (Table 3).

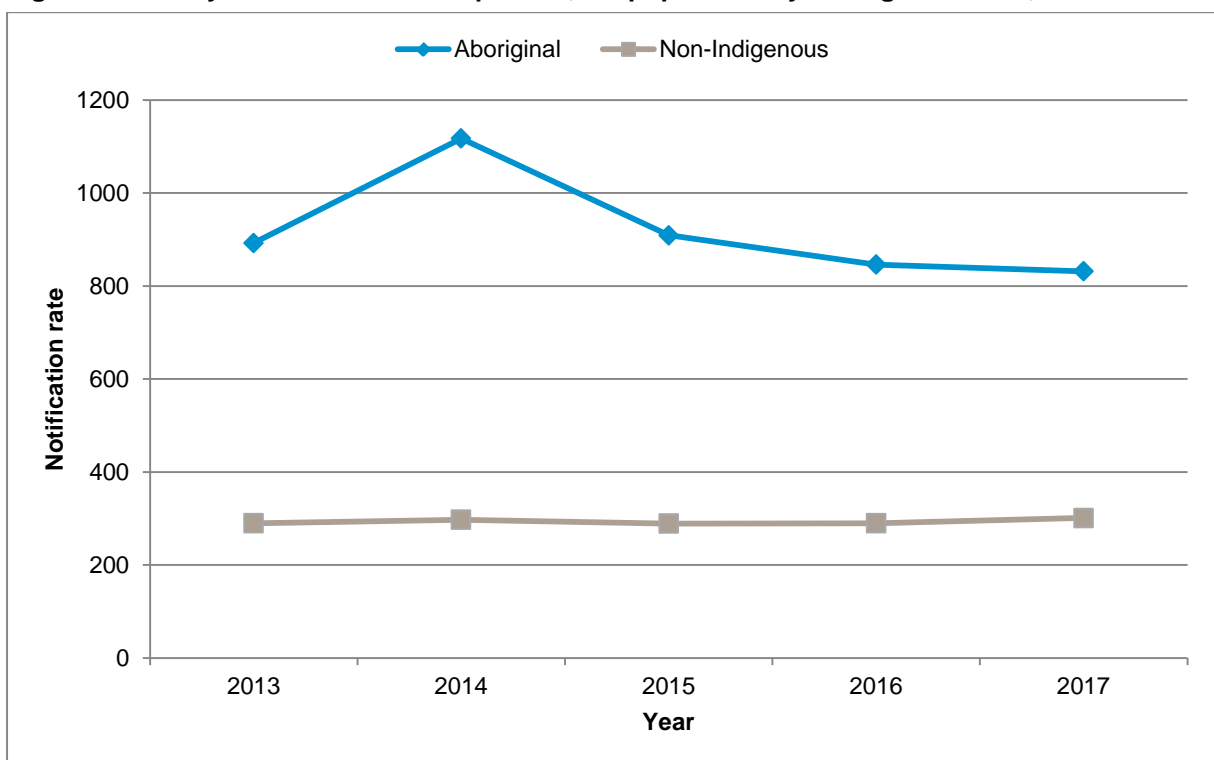
The age specific notification rates in females (2251 per 100 000 population) and males (1520 per 100,000 population) were highest in the 20-24 year age group, with higher rates in males compared to females in the age groups over 25 years (Table 4).

There were 6,696 positive clinical specimens reported from the 5,910 chlamydia cases notified in 2017. Several cases submitted multiple specimens, including different specimen types. Overall, urine specimens were most common (4,233; 63%) followed by vaginal (900; 13%) and cervical (778; 12%) swabs (Table 5).

**Figure 1 Number of new diagnoses of chlamydia in South Australia by sex, 2008 to 2017**



**Figure 2 Chlamydia notification rate per 100,000 population by Aboriginal status, 2013 to 2017**



**Table 2 Number of diagnoses of chlamydia in South Australia by epidemiological characteristics, 2013 to 2017**

<b>Year of diagnosis</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Number of notifications</b>	<b>5,601</b>	<b>5,550</b>	<b>5,454</b>	<b>5,483</b>	<b>5,910</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	348	445	370	352	346
Non-Indigenous	4,723	4,888	4,794	4,838	5,060
Not stated	530	217	290	293	504
<b>Sex</b>					
Female	3,267	3,289	3,134	3,136	3,225
Male	2,334	2,261	2,320	2,347	2,685
<b>Age-group (years)</b>					
0-14	41	37	13	28	18
15-19	1,442	1,205	1,126	1,037	1,123
20-24	2,154	2,209	2,042	2,017	2,176
25-29	981	1,068	1,116	1,197	1,258
30-39	633	656	758	811	892
40-49	241	262	257	250	286
50-59	75	87	108	112	111
60+	34	26	34	31	46
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	NA	4,416	4,268	4,281	4,458
North-West Europe	NA	131	121	102	101
Southern and Eastern Europe	NA	31	28	29	34
North Africa and the Middle East	NA	51	38	43	52
South-East Asia	NA	103	134	123	128
North-East Asia	NA	97	137	131	104
Southern and Central Asia	NA	35	30	35	44
Americas	NA	45	40	37	22
Sub-Saharan Africa	NA	92	103	114	128
Not reported	NA	174	265	588	839

NA = Not available

**Table 3 Characteristics, test information and notification source of people diagnosed with chlamydia, South Australia, 2017**

<b>2017 notifications</b>		<b>Female</b>	<b>Male</b>	<b>Total</b>
<b>Number of notifications</b>		<b>3,225</b>	<b>2,685</b>	<b>5,910</b>
<b>Exposure characteristics</b>				
<i>Sexual identity</i>	Heterosexual	2,771	1,843	4,614
	Homosexual	61	500	561
	Bisexual	33	38	71
	Unknown	360	304	664
<i>Likely location of infection</i>	South Australia	2,758	2,250	5,008
	Interstate	44	54	98
	Overseas	60	103	163
	Unknown	363	278	641
<i>Worked as a sex worker in last 12 months</i>	Yes	30	9	39
	No	2,641	2,244	4,885
	Unknown	554	432	986
<i>Had sexual activity with a sex worker in last 12 months</i>	Yes	12	47	59
	No	2,670	2,143	4,813
	Unknown	543	495	1,038
<b>Reason for test</b>				
Clinical symptoms		970	906	1,876
STI screening		1,014	710	1,724
Contact of confirmed case		499	710	1,209
Screening for other purposes		369	119	488
Antenatal screening		51	0	51
Other/unknown		322	240	562
<b>Notification source</b>				
Metropolitan GP		1,640	1,147	2,787
Clinic 275		255	687	942
Country GP		462	305	767
SHINE SA		219	144	363
Public hospital		183	38	221
Nganampa Health Service		31	27	58
Other Aboriginal health services		36	14	50
Prison health service		20	24	44
Defence forces		2	37	39
Interstate public health unit		14	17	31
O'Brien Street General Practice		0	23	23
Other		104	15	119
Unknown		259	207	466

**Table 4 Age specific rates of chlamydia, South Australia, 2017**

Age group	Female		Male	
	Number of notifications	Rate per 100,000	Number of notifications	Rate per 100,000
0-14	17	12	1	0.6
15-19	842	1658	281	529
20-24	1271	2251	905	1520
25-29	582	1011	676	1161
30-39	390	355	502	458
40-49	97	87	189	171
50-59	20	17	91	82
60+	6	2.8	40	21

**Table 5 Specimen collection sites for chlamydia notifications, South Australia, 2017**

Specimen collection site	Female	Male	Total	Total %
Urine	1,808	2,425	4,233	63
Vagina	900	0	900	13
Cervix	778	0	778	12
Rectum	120	385	505	7.5
Urethra	33	129	162	2.4
Throat	15	36	51	0.8
Other (including site not further specified)	25	12	37	0.6
Other/unknown	25	5	30	0.4
<b>Total</b>	<b>3,704</b>	<b>2,992</b>	<b>6,696</b>	

## Gonorrhoea

In 2017, there were 1,271 notifications of gonorrhoea in South Australia, an increase compared to cases in 2016 of 1,110, and the five year average (2012-2016) of 808 cases per year. Figure 3 is a 10 year epidemic curve of gonorrhoea in South Australia by sex, demonstrating the increase in cases since 2013.

The notification rate of gonorrhoea in 2017 was 73.9 per 100,000 population, above that of 2016 of 64.9 per 100,000 population. In 2017, there were 248 notifications in people that identified as Aboriginal. The notification rate in the Aboriginal population rose to 596 per 100,000 in 2017, up from 543 per 100,000 in 2016. Notification rates in the non-Indigenous population remained lower than for the Aboriginal population at 59 per 100,000 in 2017 and 51 per 100,000 in 2016 (Figure 4).

Notifications in 2017 were predominantly in males (806; 63%), consistent with 2016. Seventy-three per cent of notifications were in people aged 20 to 39 years. The median age of cases in 2017 was 28 years (range 3 to 74 years), similar to 2016 with a median age of 27 years (range 12 to 73 years). Two hundred and forty-eight cases were in people who identified as Aboriginal, including 56 (23%) cases residing in metropolitan Adelaide and 174 (70%) from rural and remote regions of South Australia. The median age of Aboriginal cases was 23 years (range 14 to 68 years). Non-Indigenous cases were predominantly residents of metropolitan Adelaide at the time of their diagnosis (860; 87%). The majority of cases notified in 2017 were born in the Oceania and Antarctica major region (1,067; 84%), with 1,053 of the cases born in Australia. South-East Asia (32; 3%) was the next most common major region for country of birth for cases in 2017 (Table 6).

Males diagnosed with gonorrhoea in 2017 were equally likely to report sexual contact with males (337; 42%) as with females (364; 45%), whereas females diagnosed with gonorrhoea were most likely to report sexual contact with males (395; 85%). Infections were most commonly acquired in South Australia (1,076; 85%). Twenty one cases (14 females and 7 males) reported working as a sex worker in 2017 and 27 cases (4 females and 23 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 2017 were clinical symptoms (567; 45%) and STI screening (335; 26%), with a further 206 (16%) cases tested as they were a sexual contact of a previously confirmed case. Metropolitan general practitioners were the most common notification source (426; 34%), followed by the specialist sexual health service Clinic 275 (367; 29%) (Table 7).

Of the 1,271 gonorrhoea notifications in 2017, 506 (214 females and 292 males) were reported as asymptomatic infections and 646 (205 females and 441 males) were reported as symptomatic infections. Information was not available for 119 notifications.

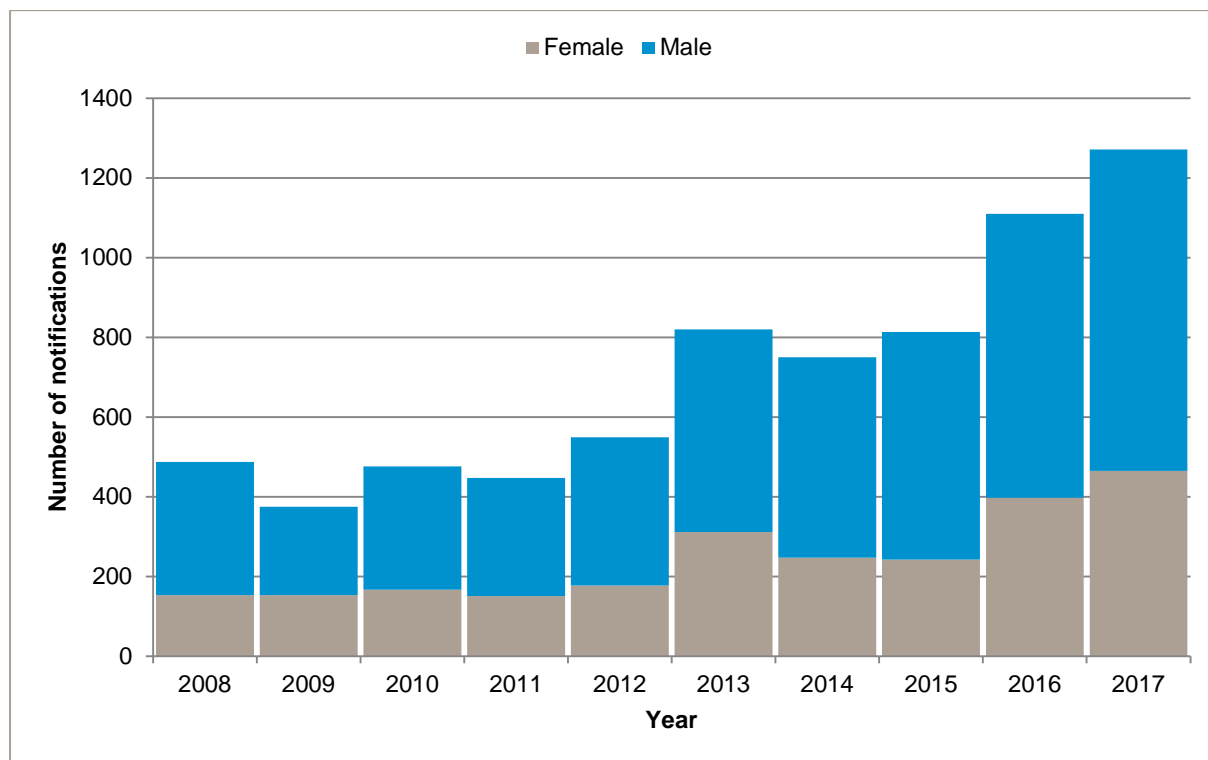
The highest notification rate for gonorrhoea in females was in the 20-24 year age group (252 per 100,000 population). The highest rates in males were in the 20-24 year age group (309 per 100,000) and 25-29 year age group (311 per 100,000) (Table 8).

There were 2,472 positive specimens reported from the 1,271 gonorrhoea cases notified in 2017. Several cases submitted multiple specimens, including different specimen types. Urine samples were the most common specimen type, with 759 specimens (31%), followed by rectal (409; 17%) and urethral (392; 16%) swabs (Table 9).

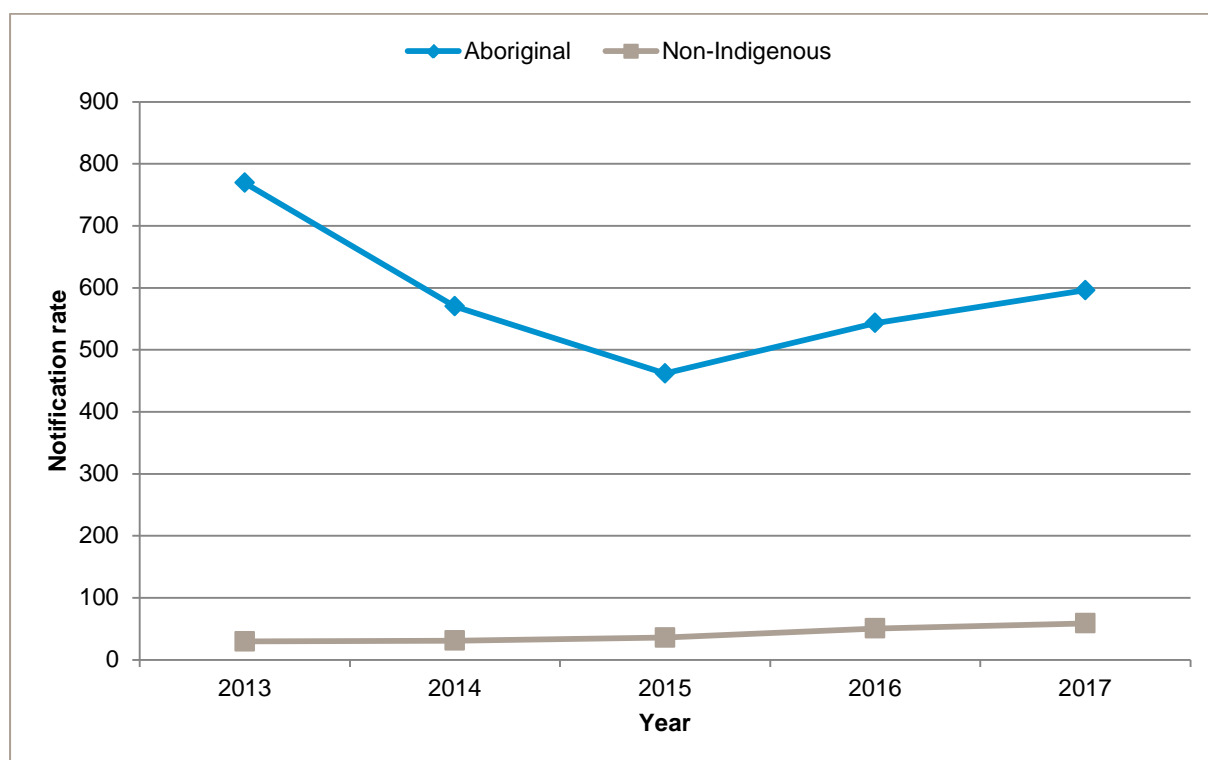


Gonococcal antibiotic susceptibility patterns are monitored by SA Pathology. All South Australian data are part of the Australian Gonococcal Surveillance Programme with annual reports published by the Australian Department of Health (<http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-pubs-annlrpt-gonoanrep.htm>).

**Figure 3 Number of new diagnoses of gonorrhoea in South Australia by sex, 2008 to 2017**



**Figure 4 Gonorrhoea notification rate per 100,000 population by Aboriginal status, 2013 to 2017**



**Table 6 Number of diagnoses of gonorrhoea in South Australia by epidemiological characteristics, 2013 - 2017**

<b>Year of diagnosis</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Number of notifications</b>	<b>820</b>	<b>750</b>	<b>813</b>	<b>1,110</b>	<b>1,271</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	300	227	188	226	248
Non-Indigenous	483	508	594	846	990
Not stated	37	15	31	38	33
<b>Sex</b>					
Female	311	247	242	397	465
Male	509	503	571	713	806
<b>Age-group (years)</b>					
0-14	12	12	3	8	12
15-19	162	128	85	118	135
20-24	205	190	202	283	326
25-29	162	156	148	270	257
30-39	139	156	218	259	345
40-49	87	70	88	102	129
50-59	38	32	53	50	44
60+	15	6	16	20	23
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	NA	625	644	888	1,067
North-West Europe	NA	23	26	27	23
Southern and Eastern Europe	NA	1	5	8	4
North Africa and the Middle East	NA	7	7	7	5
South-East Asia	NA	16	32	34	32
North-East Asia	NA	14	6	17	19
Southern and Central Asia	NA	10	13	21	10
Americas	NA	14	12	12	4
Sub-Saharan Africa	NA	0	12	7	14
Not reported	NA	40	56	89	93

NA = Not available

**Table 7 Exposure characteristics test information and notification source for gonorrhoea, South Australia, 2017**

<b>2017 notifications</b>		<b>Female</b>	<b>Male</b>	<b>Total</b>
<b>Number of notifications</b>		<b>465</b>	<b>806</b>	<b>1,271</b>
<b>Exposure characteristics</b>				
<i>Sexual identity</i>	Heterosexual	395	364	759
	Homosexual	5	337	342
	Bisexual	9	33	42
	Unknown	56	72	128
<i>Likely location of infection</i>	South Australia	401	675	1,076
	Interstate	7	38	45
	Overseas	5	31	36
	Unknown	52	62	114
<i>Worked as a sex worker in last 12 months</i>	Yes	14	7	21
	No	377	698	1,075
	Unknown	74	101	175
<i>Had sexual activity with a sex worker in last 12 months</i>	Yes	4	23	27
	No	353	626	979
	Unknown	108	157	265
<b>Reason for test</b>				
Clinical symptoms		157	410	567
STI screening		123	212	335
Contact of confirmed case		97	109	206
Screening for other purposes		36	23	59
Antenatal screening		5	0	5
Other/unknown		47	52	99
<b>Notification source</b>				
Metropolitan GP		180	246	426
Clinic 275		56	311	367
Nganampa Health Service		62	60	122
Public hospital		40	26	66
Country GP		35	27	62
SHINE SA		29	30	59
Other Aboriginal health services		9	16	25
O'Brien Street General Practice		0	16	16
Prison health service		1	14	15
Interstate public health unit		1	9	10
Defence forces		0	7	7
Other		23	6	29
Unknown		29	38	67

**Table 8 Age specific rates of gonorrhoea, South Australia, 2017**

Age group	Female		Male	
	Number of notifications	Rate per 100,000	Number of notifications	Rate per 100,000
0-14	11	7.4	1	0.6
15-19	71	140	64	121
20-24	142	252	184	309
25-29	76	132	181	311
30-39	116	105	229	209
40-49	43	38	86	78
50-59	4	3.5	40	36
60+	2	0.9	21	11

**Table 9 Specimen collection sites for gonorrhoea notifications, South Australia, 2017**

Specimen collection site	Female	Male	Total	Total %
Urine	241	518	759	31
Rectum	52	357	409	17
Urethra	2	390	392	16
Other/not stated	58	326	384	16
Vagina	287	0	287	12
Cervix	217	0	217	8.8
Throat/pharynx	11	13	24	1.0
<b>Total</b>	<b>868</b>	<b>1,604</b>	<b>2,472</b>	

## Syphilis (infectious)

In 2017, there were 158 notifications of infectious syphilis (infections of less than two years' duration) in South Australia, an increase compared to 2016 with 88 notifications and an increase compared to the five year average (2012-2016) of 55 notifications per year (Figure 5).

From 2015 onwards, South Australia adopted the surveillance case definition from the Australian National Notifiable Diseases Surveillance System, which includes confirmed and probable infectious syphilis categories. Eighteen of the cases in 2017 met the probable case definition, and 140 were confirmed cases.

The notification rate in 2017 was 9.2 per 100,000 population, almost double the rate in 2016 of 5.1 per 100,000. Notification rates in the Aboriginal population rose to 70 per 100,000 in 2017, up from 26.4 per 100,000 in 2016. Notification rates in the non-Indigenous population also rose in 2017 to 7.7 per 100,000 compared to 4.6 per 100,000 in 2016 (Figure 6).

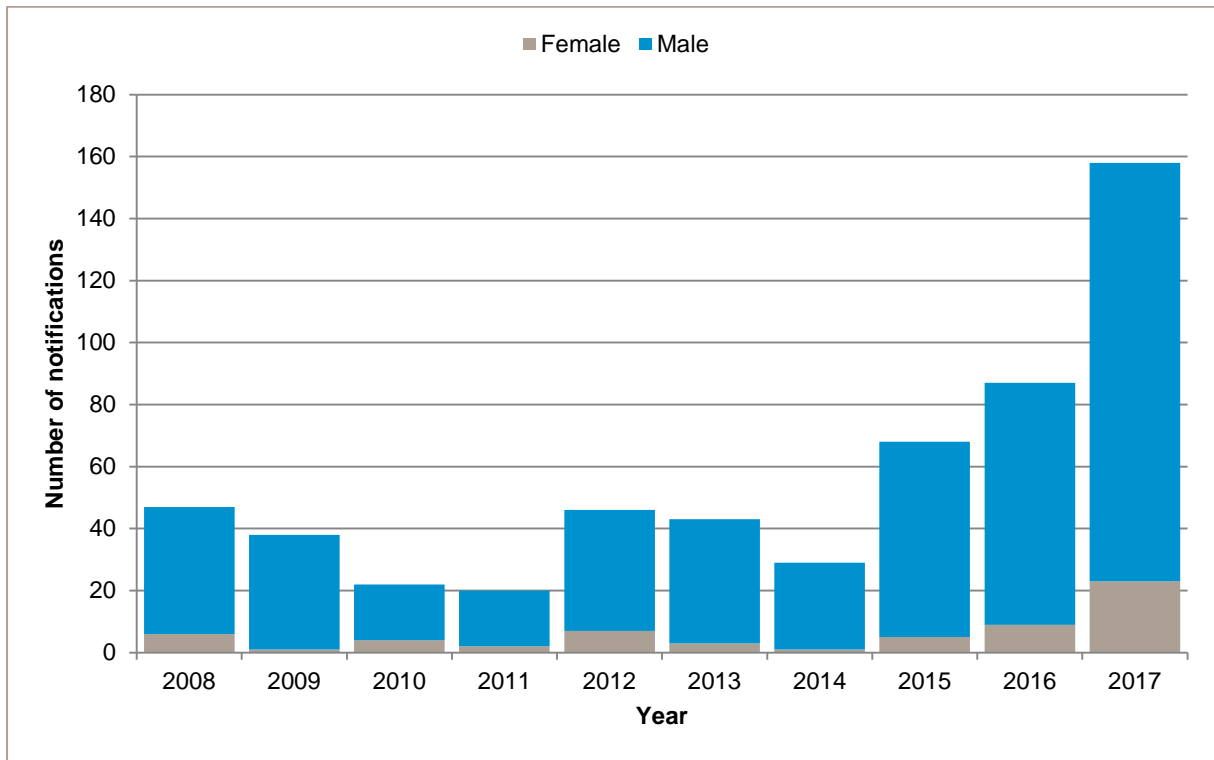
Notifications in 2017 were predominantly in males (135; 85%), consistent with previous years. The median age of all cases in 2017 was 37 years (range 18 to 74 years), with an increase in cases aged over 30 years compared to previous years. Twenty-nine cases were in people who identified as Aboriginal, including six cases from metropolitan Adelaide with others from rural and remote regions of South Australia. The median age of Aboriginal cases in 2017 was 30 years (range 22 to 67 years). Non-Indigenous cases (117; 91%) were predominantly residents of metropolitan Adelaide at the time of their diagnosis, compared to the majority of Aboriginal cases (23; 79%) being residents of rural and remote South Australia. The majority of cases notified in 2017 were born in the Oceania and Antarctica major region (126; 80%), with 124 of the cases born in Australia. In 2017, there were cases reported that were born in each of the other major regions, but all had less than 10 cases per region (Table 10).

Males diagnosed with syphilis in 2017 were most likely to report sexual contact with males (111; 82%, including six cases reporting bisexual contact), and female cases (22; 96%) almost exclusively reported sexual contact with males. Infections were most commonly acquired in South Australia (132; 84%). Two cases reported work as a sex worker in the 12 months prior to infection and three 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 2017 were clinical symptoms (68; 43%), STI screening (59; 37%) and a further 18 cases (11%) tested as they were a sexual contact of a previously confirmed case. In 2017, specialist sexual health services were most likely to notify cases (Clinic 275 58; 37%; O'Brien Street Practice 24; 15%. SHINE SA 5; 3%) along with metropolitan general practitioners (29; 18%) (Table 12).

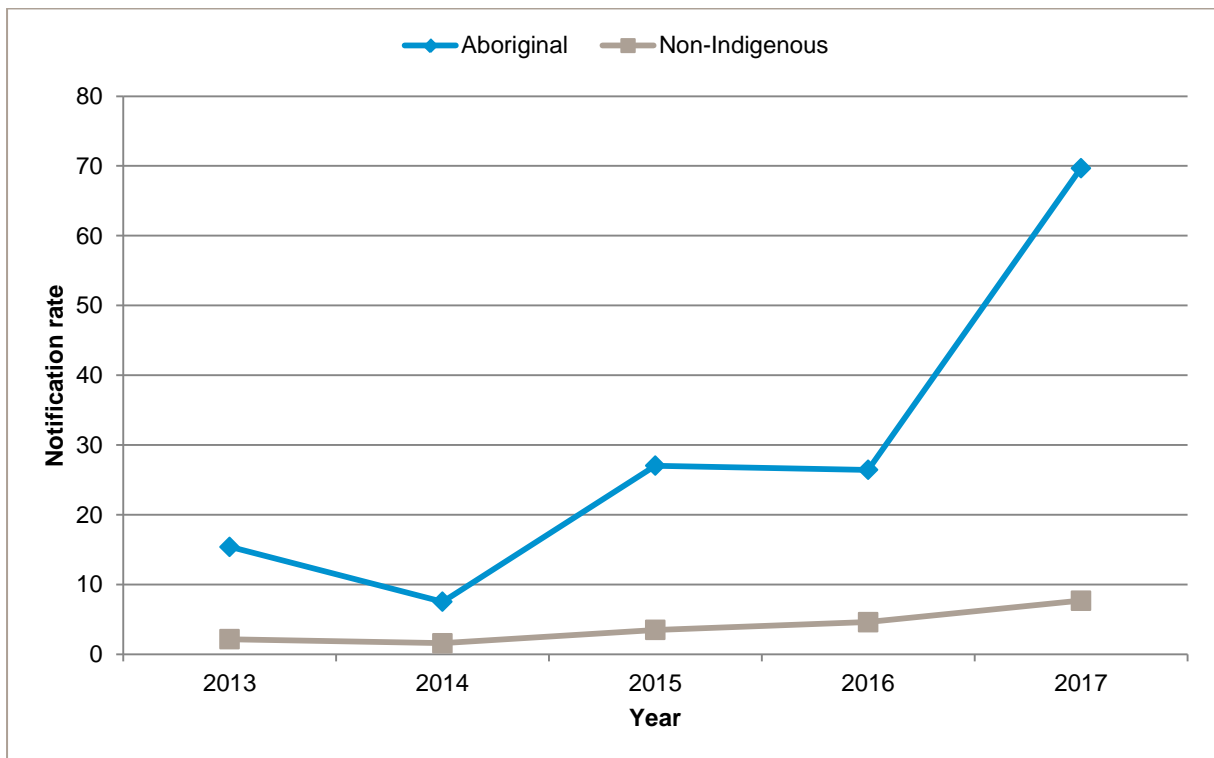
The majority of infectious syphilis cases were staged as early latent syphilis (73; 46%) followed by primary syphilis (50; 32%), and there were four cases of early neurosyphilis notified in 2017 (Table 12).

**Figure 5 Number of new diagnoses of infectious syphilis in South Australia by sex, 2008 to 2017**



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, 2013 to 2017**



**Table 10 Number of diagnoses of infectious syphilis in South Australia by epidemiological characteristics, 2013 to 2017**

Year of diagnosis	2013	2014	2015	2016	2017
<b>Number of notifications</b>					
Confirmed	43	29	56	74	140
Probable	NA	NA	13	14	15
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	6	3	11	11	29
Non-Indigenous	35	26	58	77	129
Not stated	2	0	0	0	0
<b>Sex</b>					
Female	3	1	5	9	23
Male	40	28	63	78	135
Indeterminate	0	0	1	1	0
<b>Age-group (years)</b>					
0-14	0	0	0	0	0
15-19	2	2	0	2	2
20-24	6	1	9	12	17
25-29	4	3	17	20	25
30-39	11	12	14	23	47
40-49	10	3	16	18	26
50-59	8	7	7	9	26
60+	2	1	6	4	15
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	25	21	56	73	126
North-West Europe	4	2	6	3	6
Southern and Eastern Europe	1	0	0	1	3
North Africa and the Middle East	0	0	0	1	3
South-East Asia	2	1	3	3	7
North-East Asia	4	0	1	0	5
Southern and Central Asia	1	0	1	2	1
Americas	3	3	0	3	1
Sub-Saharan Africa	0	1	2	1	3
Not reported	3	1	0	1	3

NA = Not available

**Table 11 Exposure characteristics, test information and notification source for infectious syphilis notifications, South Australia, 2017**

2017 notifications		Female	Male	Total
<b>Number of notifications</b>		<b>23</b>	<b>135</b>	<b>158</b>
<b>Exposure characteristics</b>				
<i>Sexual identity</i>	Heterosexual	22	105	127
	Homosexual	0	23	23
	Bisexual	0	6	6
	Unknown	1	1	2
<i>Likely location of infection</i>	South Australia	17	115	132
	Interstate	4	11	15
	Overseas	0	5	5
	Unknown	2	4	6
<i>Worked as a sex worker in last 12 months</i>	Yes	1	1	2
	No	19	128	147
	Unknown	3	6	9
<i>Had sexual activity with a sex worker in last 12 months</i>	Yes	0	3	3
	No	18	120	138
	Unknown	5	12	17
<b>Reason for test</b>				
Clinical symptoms		8	60	68
STI screening		9	50	59
Contact of confirmed case		4	14	18
Screening for other purposes		2	10	12
Other/unknown		0	1	1
<b>Notification source</b>				
Clinic 275		2	56	58
Metropolitan GP		4	25	29
O'Brien Street General Practice		0	24	24
Public hospital		2	9	11
Other Aboriginal Health Services		7	4	11
Country GP		1	5	6
Nganampa Health Service		6	0	6
SHINE SA		0	5	5
Prison health service		1	2	3
Interstate public health unit		0	3	3
Blood transfusion service		0	1	1
Other		0	1	1

**Table 12 Staging of infectious syphilis cases in 2017 for clinical management**

Syphilis staging	Female	Male	Total
Primary	4	46	50
Secondary	5	23	28
Early latent	14	59	73
Late latent	0	2	2
Early neurosyphilis	0	4	4
Not staged	0	1	1



## Multijurisdictional syphilis outbreak

In April 2015, the Multijurisdictional Syphilis Outbreak Working Group was formed by the Communicable Diseases Network of Australia (CDNA) in response to an ongoing outbreak of syphilis among Aboriginal 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, the Communicable Disease Control Branch noted an increase in infectious syphilis cases in the Western, Eyre and Far North regions of South Australia and became part of the multijurisdictional outbreak. The outbreak case definition for South Australian cases (as of October 2018) 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 Eyre or Western or Far North regions from 15 November 2016 onwards or is a sexual contact of a confirmed outbreak case”. In 2017, 30 South Australian cases met the outbreak case definition. The cases included 17 females and 13 males, with a median age of 30 years (range less than one year to 46 years). The case less than one year of age was a newborn, diagnosed with congenital syphilis. Twenty-three of the cases (77%) were from the Far North and Flinders Ranges regions of South Australia.

## Congenital syphilis

There was one case of congenital syphilis notified in 2017. The case was Aboriginal and from a rural region of South Australia. The case was diagnosed at the time of birth. This was the first case of congenital syphilis notified in South Australia since 1999.

## Syphilis (unspecified)

In 2017, there were 60 notifications of non-infectious syphilis (greater than two years' duration or unspecified) in South Australia, similar to the number of cases in 2016 (57)<sup>\*</sup>. The notification rate of unspecified syphilis in 2017 was 3.5 per 100,000 population, similar to the rate in 2016 of 3.3 per 100,000 population. The notification rate in the Aboriginal population rose to 46 per 100,000 in 2017, up from 36 per 100,000 in 2016. Notification rates in the non-Indigenous population remained stable at 2.4 per 100,000 in 2017 and 2.5 per 100,000 in 2016 (Table 13).

Notifications in 2017 were predominantly in males (49; 82%), consistent with 2016. The median age of cases in 2017 was 48 years (range 18 to 94 years), a small increase compared to 2016 with a median age of 42 years (range 24 to 83 years). Nineteen cases were in people who identified as Aboriginal, including four cases residing in metropolitan Adelaide, 14 from rural and remote regions of South Australia and one case residing interstate at the time of diagnosis. The median age of Aboriginal cases was 48 years (range 32 to 58 years). Non-Indigenous cases (32; 78%) were predominantly residents of metropolitan Adelaide at the time of their diagnosis. The majority of cases notified in 2017 were born in the Oceania and Antarctica major region (35; 58%), with 34 of the cases born in Australia. South-East Asia (8; 13%) was the next most common region for country of birth for cases in 2017 (Table 13).

Non-infectious syphilis cases in 2017 were most commonly diagnosed by metropolitan general practitioners (18; 30%), followed by Clinic 275 (10; 17%) and prison health services (9; 15%) (Table 14).

Fifty-nine (98%) of the non-infectious syphilis cases in 2017 were staged as late latent (asymptomatic) infection.

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<sup>\*</sup> This category of syphilis excludes old treated cases and other treponemal infections. Due to changes in surveillance practices from 2016 onwards, unspecified syphilis in 2017 was only compared to unspecified syphilis in 2016 and not previous years.

**Table 13 Number of diagnoses of non-infectious syphilis in South Australia by epidemiological characteristics, 2016 and 2017**

Year of diagnosis	2016	2017
<b>Number of notifications</b>	<b>57</b>	<b>60</b>
<b>Aboriginal and Torres Strait Islander status</b>		
Aboriginal	15	19
Non-Indigenous	41	41
Not stated	1	0
<b>Sex</b>		
Female	15	11
Male	42	49
<b>Age-group (years)</b>		
0-14	0	0
15-19	0	1
20-24	2	0
25-29	5	2
30-39	18	15
40-49	8	16
50-59	8	14
60+	16	12
<b>Country of birth (by major region)</b>		
Oceania and Antarctica	26	35
North-West Europe	4	2
Southern and Eastern Europe	1	3
North Africa and the Middle East	4	4
South-East Asia	8	8
North-East Asia	4	1
Southern and Central Asia	5	1
Americas	3	1
Sub-Saharan Africa	1	5
Not reported	1	0

**Table 14 Notification source of non-infectious syphilis, South Australia, 2017**

Notification source	Female	Male	Total
Metropolitan GP	1	17	18
Clinic 275	1	9	10
Prison health service	0	9	9
Country GP	3	4	7
Public hospital	1	5	6
Aboriginal Health services	2	3	5
O'Brien Street General Practice	0	1	1
SHINE SA	0	1	1
Interstate public health unit	1	0	1
Other	2	0	2

## Human immunodeficiency virus

In 2017, there were 60 notifications of human immunodeficiency virus infection (HIV) in South Australia, an increase compared to 53 cases in 2016, and the five year average (2012-2016) of 55.2 cases per year. Figure 7 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 2017 was 3.5 per 100,000 population, above that in 2016 of 3.1 per 100,000 population. The notification rate in the Aboriginal population rose to 9.6 per 100,000 in 2017, up from 4.8 per 100,000 in 2016. Notification rates in the non-Indigenous population remained lower than for the Aboriginal population at 3.3 per 100,000 in 2017 and 3.1 per 100,000 in 2016 (Figure 8).

Notifications in 2017 were predominantly in males (52; 87%), consistent with 2016. The median age of cases in 2017 was 37.5 years (range 21 to 62 years), above 2016 with a median age of 33 years (range 16 to 68 years). Four cases were in people who identified as Aboriginal. HIV cases in 2017 were predominantly residents of metropolitan Adelaide at the time of their diagnosis (50; 83%). The majority of cases notified in 2017 were born in the Oceania and Antarctica major region (33; 55%), with 30 of the cases born in Australia. North Africa and the Middle East (10; 17%) was the next most common major region for country of birth for cases in 2017 (Table 15).

Males diagnosed with HIV in 2017 were more likely to report sexual contact with males (33; 64%) than with females (13; 25%), whereas females diagnosed with HIV all reported sexual contact with males. Infections were most commonly acquired overseas (31; 52%) followed by acquisition in South Australia (26; 43%). The majority of cases were likely exposed to HIV via sexual contact (50; 83%), followed by sexual contact and injecting drug use (IDU) (9; 15%) (Table 16).

Of the new HIV notifications in 2017, 15 (25%) 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 their diagnosis (20; 33%). The specialist sexual health service, Clinic 275 notified the highest proportion of HIV cases in 2017 (23; 38%), followed by metropolitan general practitioners (17; 28%) (Table 16).

In 2017, 71% of male HIV cases (37) identified as MSM (including four that reported being bisexual), compared to 2016 where 86% (37) of male HIV cases identified as MSM. Four MSM cases in 2017 also reported IDU as a risk factor. Eighteen males identifying as MSM were born in the Oceania and Antarctica major region, with 16 of the cases born in Australia. South East Asia (8; 13%) was the next most common region for country of birth for MSM cases, followed by North Africa and the Middle East (6; 10%). Eighteen MSM cases (43%) reported they acquired their infection in South Australia, followed by 17 overseas, one interstate and one unknown. Nine MSM cases were known positive cases previously diagnosed overseas. Information on previous testing for MSM cases included 10 cases that had their last negative HIV test more than 12 months before their diagnosis, eight were never previously tested, seven tested negative less than 12 months before their diagnosis and three had unknown testing histories.

There were 13 (25%) males diagnosed with HIV in 2017 who identified as heterosexual compared to five (12%) cases in 2016. Four heterosexual cases in 2017 also reported IDU as a risk factor. Of the heterosexual males, 10 were born in the Oceania and Antarctic major region (nine in Australia), and one each was born from the major regions of North West Europe, North Africa and the Middle East and Sub Saharan Africa. The majority of these cases acquired their infection overseas (nine cases), with three acquired in South Australia and one interstate. Six cases had been previously tested for HIV more than 12 months prior, four were never previously tested and three had been previously

diagnosed overseas. Additionally, it was unknown or not reported for two males diagnosed with HIV in 2017, whether they identified as MSM, heterosexual or bisexual.

In 2017, all eight females notified with HIV identified as heterosexual, similar to the 10 heterosexual females in 2016. One case also reported IDU as a risk factor. Of these, four were born in Australia, three in the major region of North Africa and the Middle East and one in Sub Saharan Africa. Four cases reported acquisition of infection in South Australia and four from overseas.

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, 16 males and two females (18; 30%) had CD4 lymphocyte counts indicative of late diagnosis, with data missing for three males (3; 5%). This is compared to 51% (27) of newly diagnosed cases in 2016 with CD4 counts indicative of late diagnosis. Ten of the males with CD4 counts below 350 cells/mm<sup>3</sup> at diagnosis identified as MSM. Of the cases with CD4 counts indicative of late diagnosis nine were born in the Oceania and Antarctica major region, five cases were from the North Africa and Middle East region, with single cases from North West Europe, South East Asia, the Americas and Sub-saharan Africa.

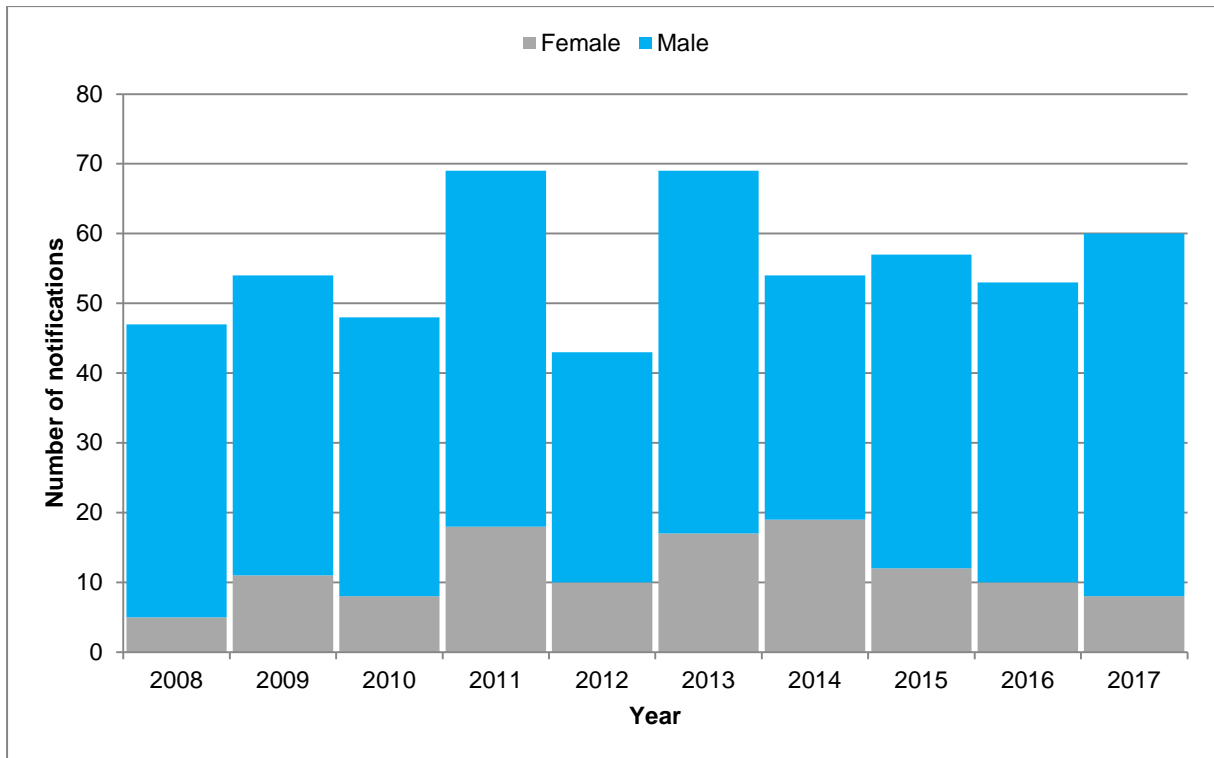
In 2017, gene sequenced subtype data was available for 41 (68%) cases. Subtype designation was determined from sequencing three genes (protease, reverse transcriptase and integrase). Subtype B was the main circulating strain in South Australia in 2017 with 25 cases (61%) typed as this strain, 19 of whom acquired the infection in South Australia. Subtype B is consistently the most common subtype in South Australia, including 26 of 44 typed cases in 2016 and 24 of 58 cases in 2015. Subtype CRF01\_AE was the next most commonly identified strain with nine cases (22%), with eight cases acquiring infection overseas and one in South Australia. No strain data was available for four locally acquired cases and 15 overseas acquired cases at the time of reporting (Table 17).

Subtype B was also most commonly reported in those who identified as MSM (17; 68%, three bisexual), but was also identified in heterosexual males and females. Subtype CRF01\_AE was most commonly identified amongst heterosexual males (6; 67%) (Table 18).

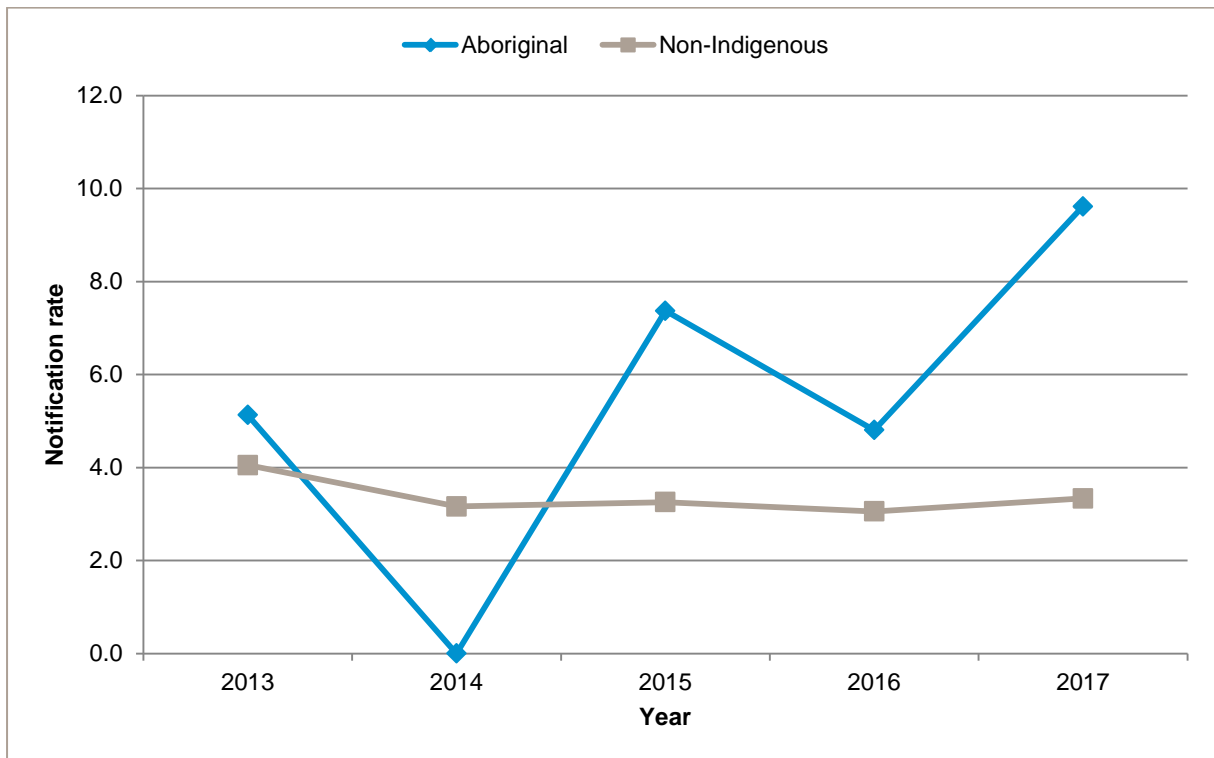
Resistance mutations were identified in 13 HIV cases notified in 2017. The majority of cases were identified with K103N resistance (seven cases); all of whom acquired their infections in South Australia. There were two cases identified with V179D resistance, both of which acquired infection overseas. One locally acquired case had multiple resistance genes (V106I/T691/T69V/K70T) (Table 19).

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

**Figure 7 Number of new diagnoses of HIV in South Australia by sex, 2008 to 2017**



**Figure 8 HIV notification rate per 100,000 population by Aboriginal status, South Australia, 2013 to 2017**



**Table 15 Number of diagnoses of HIV in South Australia by epidemiological characteristics, 2013 - 2017**

<b>Year of diagnosis</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Number of notifications</b>	<b>69</b>	<b>54</b>	<b>57</b>	<b>53</b>	<b>60</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	2	0	3	2	4
Non-Indigenous	66	52	54	51	56
Not stated	1	2	0	0	0
<b>Sex</b>					
Female	17	19	12	10	8
Male	52	35	45	43	52
<b>Age-group (years)</b>					
0-14	1	0	0	0	0
15-19	1	0	4	2	0
20-24	3	5	9	6	8
25-29	11	13	6	9	8
30-39	19	17	16	18	23
40-49	14	8	14	7	15
50-59	13	6	4	7	5
60+	7	5	4	4	1
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	40	27	29	26	33
North-West Europe	5	2	5	1	2
Southern and Eastern Europe	4	1	0	2	0
North Africa and the Middle East	4	8	9	10	10
South-East Asia	2	0	3	1	8
North-East Asia	2	2	0	4	0
Southern and Central Asia	2	1	1	1	0
Americas	2	2	1	3	2
Sub-Saharan Africa	8	10	8	5	2
Not reported	0	1	1	0	1

**Table 16 Exposure characteristics, test information and notification source for HIV, South Australia, 2017**

<b>2017 notifications</b>		<b>Female</b>	<b>Male</b>	<b>Total</b>
<b>Number of notifications</b>		8	52	60
<b>Exposure characteristics</b>				
<i>Sexual identity</i>	Heterosexual	8	13	21
	Homosexual	0	33	33
	Bisexual	0	4	4
	Unknown	0	2	2
<i>Likely location of infection</i>	South Australia	4	22	26
	Interstate	0	2	2
	Overseas	4	27	31
	Unknown	0	1	1
<i>HIV exposure category</i>	Sexual contact	7	43	50
	Sexual contact and injecting drug use	1	8	9
	Unknown	0	1	1
<b>HIV testing history</b>				
No prior test		1	12	13
Test negative < 12 months prior to diagnosis		0	7	7
Test negative > 12 months prior to diagnosis		3	17	20
Previously diagnosed HIV positive overseas		3	12	15
Not stated/unknown		1	4	5
<b>Notification source</b>				
Clinic 275		1	22	23
Metropolitan GP		4	13	17
Country GP		1	3	4
Public hospital		0	9	9
Prison health service		0	1	1
Other		2	4	6



**Table 17 HIV-1 genes sequenced for subtypes by location of infection, South Australia, 2017**

Genes sequenced for clade			Location acquired				Total
Protease	Reverse transcriptase	Integrase	South Australia	Interstate	Overseas	Unknown	
B	B	B	19	2	3	1	25
CRF01_AE	CRF01_AE	CRF01_AE	1	0	8	0	9
A	CRF01_AE	CRF01_AE	0	0	2	0	2
C	C	C	1	0	1	0	2
NA*	C	C	0	0	1	0	1
B	C	C	0	0	1	0	1
CRF01_AE	CRF01_AE	B	1	0	0	0	1
No data			4	0	15	0	19

**Table 18 HIV-1 genes sequenced for subtypes by sex and sexual identity, South Australia, 2017**

Genes sequenced for clade			Males			Females	Total
Protease	Reverse transcriptase	Integrase	Hetero sexual	MSM	Unknown		
B	B	B	4	17	0	4	25
CRF01_AE	CRF01_AE	CRF01_AE	6	2	1	0	9
A	CRF01_AE	CRF01_AE	0	2	0	0	2
C	C	C	0	1	0	1	2
NA*	C	C	0	0	0	1	1
B	C	C	0	1	0	0	1
CRF01_AE	CRF01_AE	B	1	0	0	0	1
No data			2	14	1	2	19

**Table 19 HIV-1 Drug resistant mutations at the time of diagnosis, South Australia, 2017**

Resistance mutations	South Australia	Interstate	Overseas	Total
K103N	7	0	0	7
V106I	1	0	0	1
K101E	1	0	0	1
V179D	0	0	2	2
L210LW	1	0	0	1
V106I/T69I/T69V/K70T	1	0	0	1
<b>Total</b>	<b>11</b>	<b>0</b>	<b>2</b>	<b>13</b>

## Hepatitis B (newly acquired)

There were 11 notifications of newly acquired (acute) hepatitis B (HBV) infection in South Australia in 2017 (Figure 9).

The notification rate for acute HBV in 2017 was 0.64 per 100,000 population, slightly above the rate in 2016 of 0.35 per 100,000. The five year average of acute HBV notifications (2012-2016) was nine cases. There were no notifications among members of the Aboriginal population, consistent with low numbers as in previous years (Table 20).

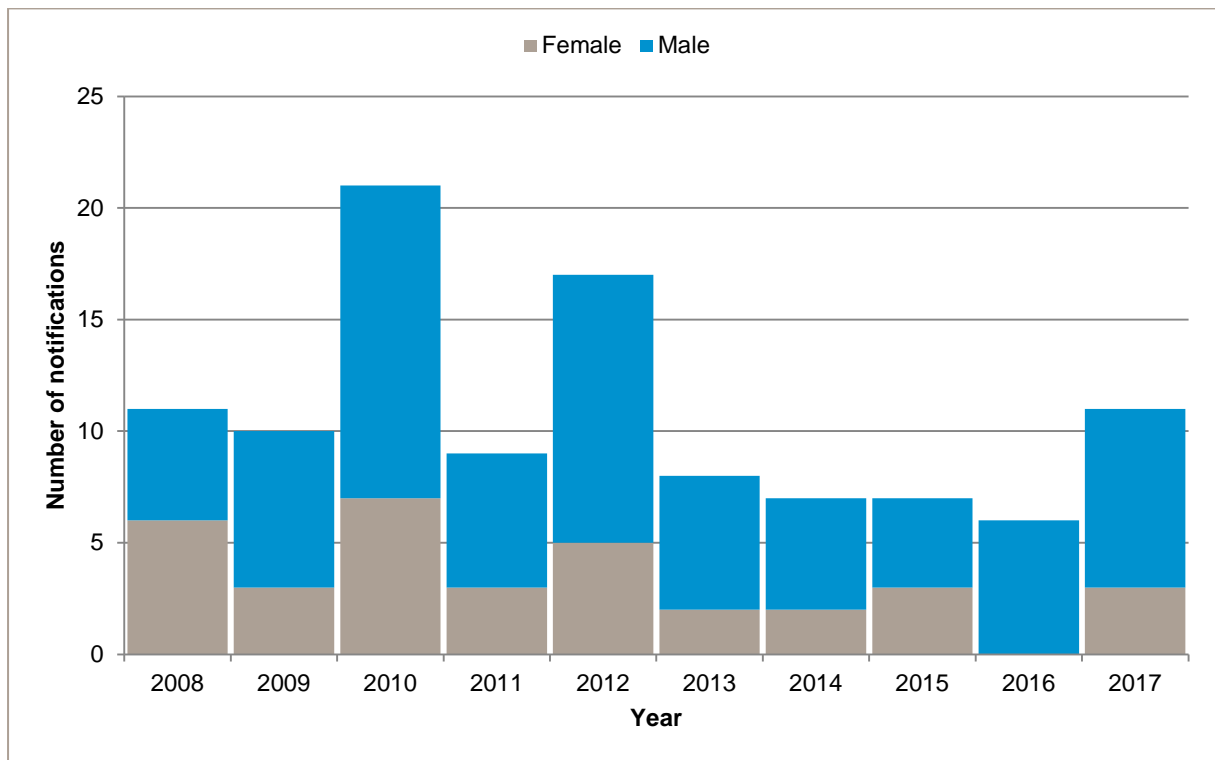
Eight of the 11 cases in 2017 were males and all cases in 2016 were males. All cases were aged over 25 years in 2017. Within the Oceania and Antarctica major region, all six cases were born in Australia, followed by three in the North-West Europe major region and two in the Southern and Eastern Europe major region (Table 20).

In 2017, six cases identified as heterosexual, three males were homosexual, one male was bisexual and one female reported no sexual partners in the previous 12 months (Table 21).

Eight cases presented to medical care with clinical signs and symptoms of acute hepatitis, two had abnormal liver function tests and one was detected as part of STI screening. Cases were largely diagnosed by metropolitan general practitioners (five cases), and in public hospitals (four cases) (Table 21).

Noting that individual cases may have reported more than one exposure category, a range of risk markers were reported by cases diagnosed in 2017 including overseas dental and surgical work. (Table 21).

**Figure 9** Number of diagnoses of newly acquired hepatitis B infection in South Australia by sex, 2008 to 2017



**Table 20 Number of diagnoses of newly acquired hepatitis B in South Australia by epidemiological characteristics, 2013 to 2017**

<b>Year of diagnosis</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Number of notifications</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>11</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	0	1	2	0	0
Non-Indigenous	8	6	5	6	11
Not stated	0	0	0	0	0
<b>Sex</b>					
Female	2	2	3	0	3
Male	6	5	4	6	8
<b>Age-group</b>					
0-14	0	1	0	1	0
15-19	1	1	2	0	0
20-24	1	0	1	0	0
25-29	0	0	0	0	1
30-39	2	0	2	2	2
40-49	2	3	2	0	2
50-59	1	0	0	2	1
60+	1	2	0	1	5
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	5	6	5	3	6
North-West Europe	0	0	1	2	3
Southern and Eastern Europe	0	0	0	0	2
North Africa and the Middle East	1	0	0	0	0
South-East Asia	1	1	0	1	0
North-East Asia	0	0	0	0	0
Southern and Central Asia	0	0	1	0	0
Americas	1	0	0	0	0
Sub-Saharan Africa	0	0	0	0	0
Not reported	0	0	0	0	0

**Table 21 Exposure characteristics, test information and notification source of people diagnosed with acute hepatitis B infection, South Australia, 2017**

<b>2017 notifications</b>		<b>Female</b>	<b>Male</b>	<b>Total</b>	
<b>Number of notifications</b>		<b>3</b>	<b>8</b>	<b>11</b>	
<b>Exposure characteristics</b>					
<i>Sexual identity</i>	Heterosexual	2	4	6	
	Homosexual	0	3	3	
	Bisexual	0	1	1	
	No sexual partners	1	0	1	
	Unknown	2	4	6	
<i>Risk markers*</i>	Surgical work overseas	0	2	2	
	Dental work overseas	0	2	2	
	Tattoos	1	1	2	
	Acupuncture	1	1	2	
	Ear or body piercing	1	1	2	
	No risks identified	1	1	2	
	Household contact with same disease	1	0	1	
	Sexual partner of same sex with same illness	0	1	1	
	Sexual partner of same sex	0	1	1	
	Unknown (not recorded)	0	1	1	
	Needlestick/biohazard injury to non-health care worker	1	0	1	
	Sexual partner overseas	0	1	1	
	<b>Reason for test</b>				
	Investigation of symptomatic hepatitis		3	5	8
Abnormal liver function tests		0	2	2	
STI screen		0	1	1	
<b>Notification source</b>					
Clinic 275		0	1	1	
Public hospital		3	1	4	
Metropolitan GP		0	5	5	
Country GP		0	1	1	

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

## Hepatitis B (unspecified)

There were 272 notifications of HBV infections of unspecified duration (where the exposure period could not be determined) in South Australia in 2017, a decrease compared to 289 cases in 2016 and the five year average of 317 cases per year (2012-2016) (Figure 10).

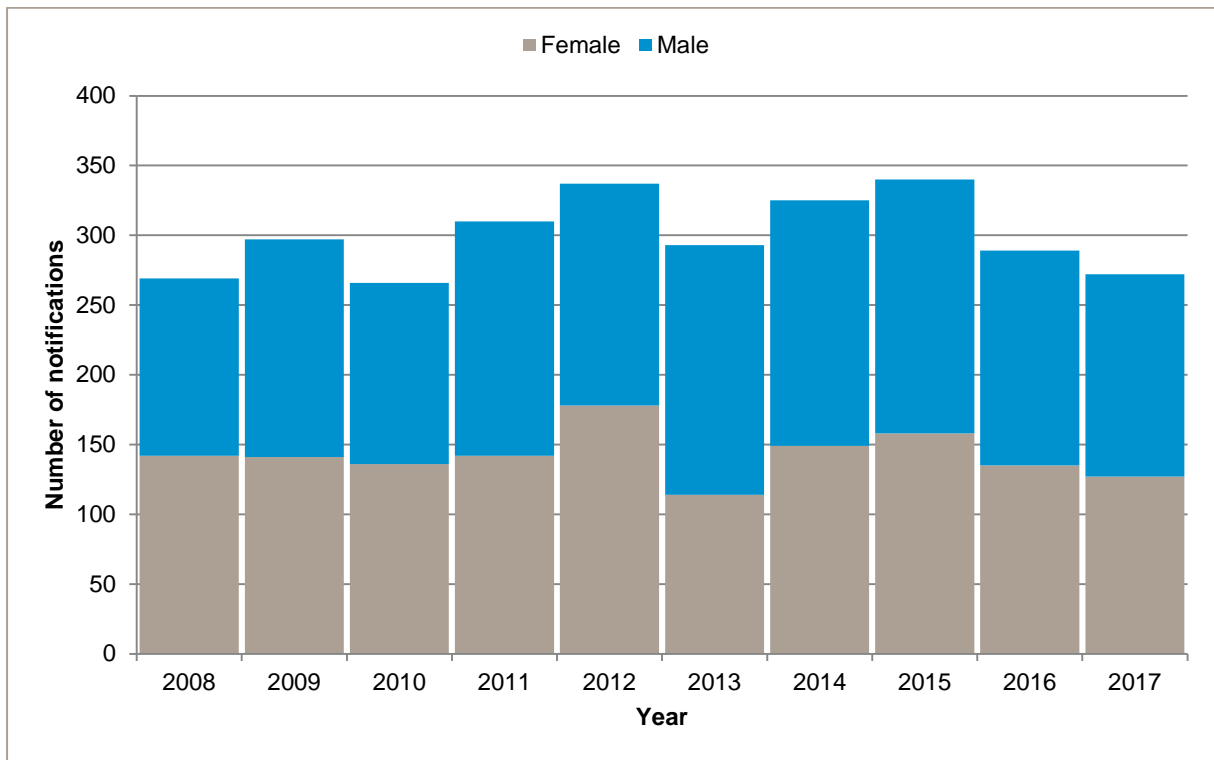
The notification rate for all unspecified HBV cases in 2017 was 15.8 per 100,000 population. The notification rate in the Aboriginal population in 2017 decreased to 14.4 per 100,000 population, below that of the non-Indigenous population at 15.8 per 100,000, and a decrease over time since 2013 (Figure 11). The rate in the non-Indigenous population has been stable over the previous five years.

Cases were evenly split between males and females (male 145; 53%), similar to previous years. Six notifications were among members of the Aboriginal population, all of these cases were residents of rural regions of South Australia. In 2017, 72% of cases were over 30 years of age. The most frequently reported major region for the country of birth of cases notified in 2017 was South East Asia (88; 32%), followed by North East Asia (83; 31%). Only 17 cases (6%) in 2017 were born in the major region of Oceania and Antarctica, which includes Australia; this is a decrease from 31 cases (11%) in 2016. Nine cases of unspecified HBV were born in Australia in 2017, six of whom identified as Aboriginal (Table 22).

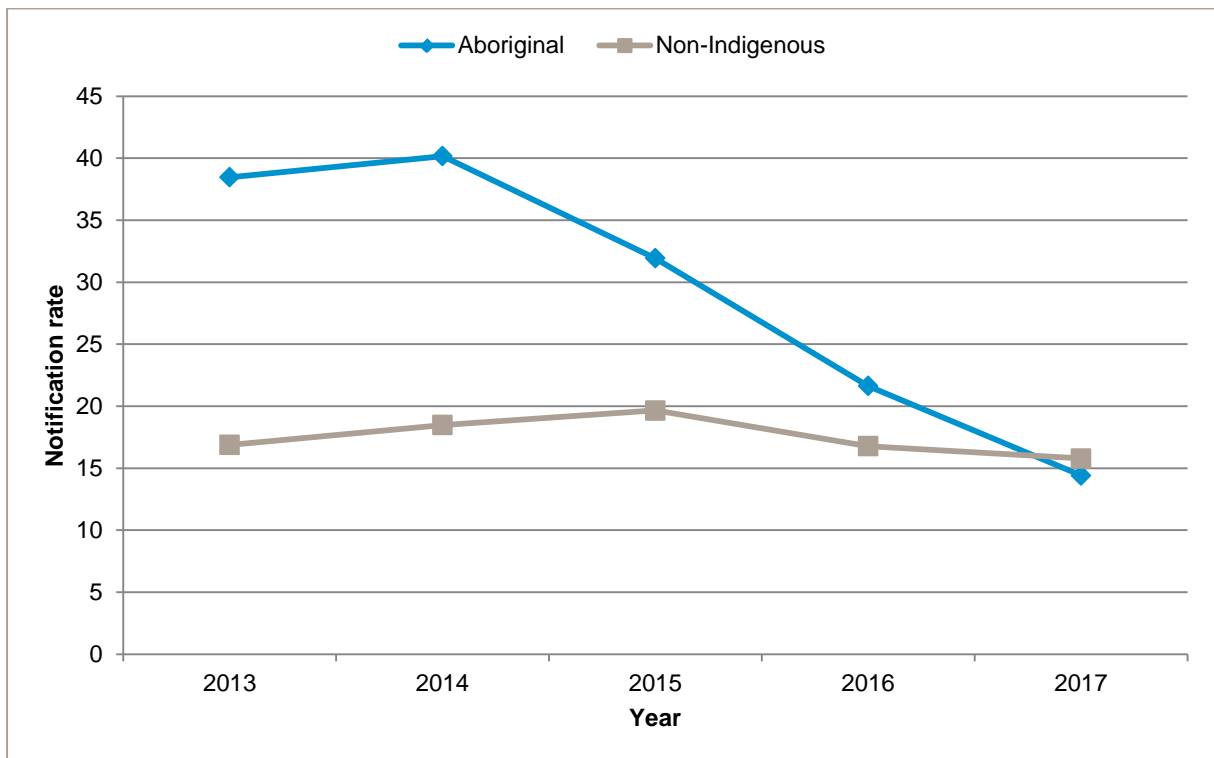
In 2017, a wide range of risk markers were reported by unspecified HBV cases, and individual cases commonly reported more than one risk marker. The risk markers were unknown for the majority of cases (201; 74%). Some common risk markers were household contact with a known case of HBV (47; 17%) and perinatal transmission (37; 14%) (Table 23).

The most common reasons for HBV testing amongst unspecified HBV cases in 2017 was migrant screening (61; 22%), antenatal screening (31; 11%) and patient request (23; 8.5%). Cases were most commonly notified by metropolitan general practitioners (157; 58%), public hospitals (31; 11%) and Clinic 275 (16; 6%) (Table 24).

**Figure 10** Number of diagnoses of unspecified hepatitis B infection in South Australia by sex, 2008 to 2017



**Figure 11** Unspecified hepatitis B notification rate per 100 000 population by Aboriginal status, South Australia, 2013 to 2017



**Table 22 Number of diagnoses of unspecified hepatitis B in South Australia by epidemiological characteristics, 2013 to 2017**

<b>Year of diagnosis</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Number of notifications</b>	<b>293</b>	<b>325</b>	<b>340</b>	<b>289</b>	<b>272</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	15	16	13	9	6
Non-Indigenous	275	304	326	280	265
Not stated	3	5	1	0	1
<b>Sex</b>					
Female	114	149	158	135	127
Male	179	176	182	154	145
<b>Age-group</b>					
0-14	9	5	2	10	4
15-19	12	17	12	18	10
20-24	24	39	28	23	25
25-29	37	47	58	31	38
30-39	102	104	101	95	86
40-49	52	50	60	63	46
50-59	20	33	42	25	24
60+	37	30	37	24	39
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	38	37	37	31	17
North-West Europe	4	3	4	0	1
Southern and Eastern Europe	12	17	19	12	9
North Africa and the Middle East	14	18	17	20	11
South-East Asia	83	100	106	88	88
North-East Asia	69	74	96	77	83
Southern and Central Asia	43	35	33	30	30
Americas	3	1	3	0	1
Sub-Saharan Africa	16	29	20	26	25
Not reported	11	11	5	5	7



**Table 23 Risk markers of people diagnosed with unspecified hepatitis B, South Australia, 2017**

<b>2017 notifications</b>		<b>Female</b>	<b>Male</b>	<b>Total</b>
<b>Number of notifications</b>		<b>127</b>	<b>145</b>	<b>272</b>
<b>Exposure characteristics</b>				
<i>Sexual identity</i>	Heterosexual	94	95	189
	Homosexual	4	9	13
	No sexual partners	8	10	18
	Unknown	21	31	52
<i>Risk markers*</i>	Household contact with known HBV	23	24	47
	Perinatal	22	15	37
	Ear or body piercing	12	3	15
	Sexual partner of opposite sex with known HBV	5	7	12
	Tattooing	4	5	9
	Surgical work overseas	6	2	8
	Acupuncture	3	3	6
	Dental work overseas	3	1	4
	Injecting drug use	0	4	4
	Blood/blood products/tissues overseas	4	0	4
	Imprisonment	0	3	3
	Health care worker no documented exposure	2	0	2
	Needle stick injury in non-health care worker	1	1	2
	Needle stick injury in health care worker	1	0	1
	Non-occupational or unspecified injury	0	1	1
	Other overseas risk	0	2	2
	Unknown (not recorded)	90	111	201

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

**Table 24 Test information and notification source of people diagnosed with unspecified hepatitis B, South Australia, 2017**

<b>2017 notifications</b>	<b>Female</b>	<b>Male</b>	<b>Total</b>
<b>Number of notifications</b>	<b>127</b>	<b>145</b>	<b>272</b>
<b>Reason for test</b>			
Migrant screen	23	38	61
Antenatal screening	31	0	31
Patient request	11	12	23
Abnormal liver function tests	6	16	22
Occupational exposure	7	15	22
Known case - monitoring	7	5	12
Health check	2	8	10
BBV/hepatitis screen	5	4	9
Other screen (not further specified)	4	5	9
Investigation of symptomatic hepatitis	1	6	7
Prison screening	0	5	5
Occupational screen	3	2	5
Contact of a case	1	3	4
Perioperative	1	2	3
Fertility screen	1	2	3
Blood or organ donor screening	2	0	2
Drug/alcohol screening	0	2	2
Other	16	14	30
Unknown	6	6	12
<b>Notification source</b>			
Metropolitan GP	78	79	157
Public hospital	18	13	31
Clinic 275	6	10	16
Country GP	6	5	11
Prison health service	0	5	5
Aboriginal health services	0	3	3
SHINE SA	1	1	2
Private hospital	0	2	2
Australian Red Cross Blood Service	2	0	2
Drug and alcohol services	0	2	2
Other	15	24	39
Unknown	1	1	2

## Hepatitis C (newly acquired)

There were 32 notifications of newly acquired (acute) hepatitis C (HCV) infection in South Australia in 2017, a decrease compared to the five year average (2012-2016) of 54.4 notifications (Figure 12).

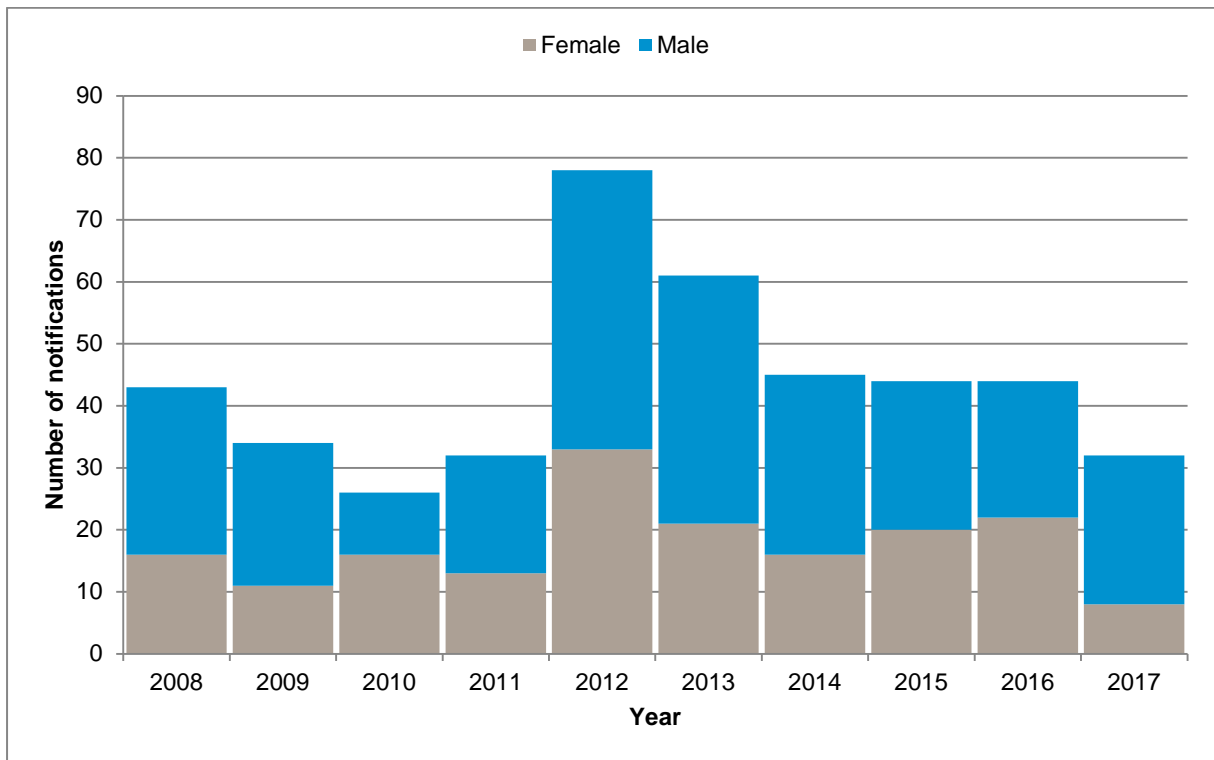
The notification rate for acute HCV in 2017 was 1.86 per 100,000, a small decrease from the rate in 2016 of 2.57 per 100,000. Eleven notifications were in people identifying as Aboriginal, with a corresponding rate of 26.4 per 100,000 in 2017. Eight of the cases in Aboriginal people were residents of metropolitan Adelaide at the time of diagnosis. Figure 13 demonstrates the higher but decreasing trend in notification rates in the Aboriginal population compared to the non-Indigenous population from 2013 to 2017.

In 2017, 75% of the notifications were in males (24), and 75% (24) were among people aged 30 years and over. Consistent with previous years, the majority of cases (30; 94%) were born in the major region of Oceania and Antarctica, including 29 born in Australia (Table 25).

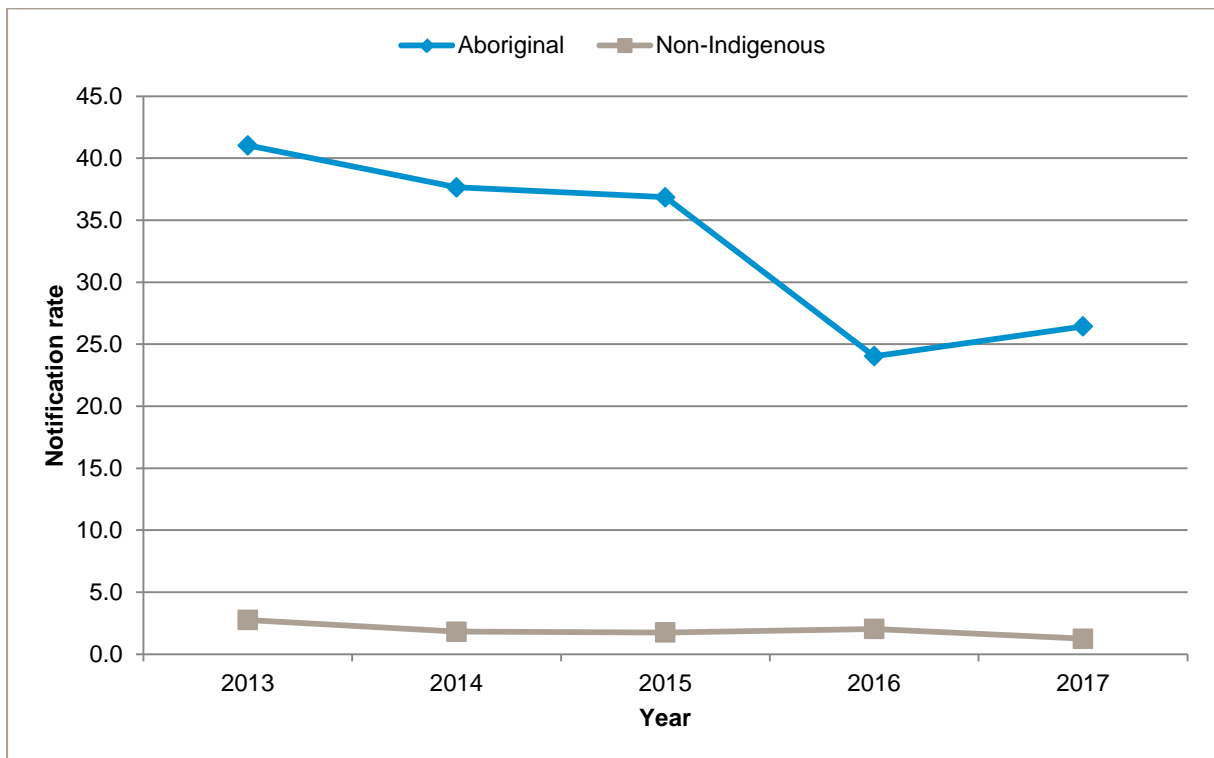
In 2017, the most commonly reported risk marker was IDU, reported by 31 of the 32 (97%) acute HCV cases. The one case that did not report IDU had no risk markers identified. Other common risk markers identified were tattooing (11; 34%) and imprisonment (6; 19%). Individual cases may have reported more than one exposure category (Table 26).

The most common reasons for HCV testing were reported as abnormal liver function tests (7; 22%), drug/alcohol screening (7; 22%), STI screening (5; 16%), investigation of symptomatic hepatitis (5; 16%) and prison screening (4; 13%). Public hospitals were the most common notifying source (10; 31%) followed by metropolitan general practitioners (8; 25%) (Table 26).

**Figure 12** Number of diagnoses of acute hepatitis C infection in South Australia by sex, 2008 to 2017



**Figure 13** Acute hepatitis C notification rate per 100 000 population by Aboriginal status, South Australia, 2013 to 2017



**Table 25 Number of diagnoses of newly acquired hepatitis C in South Australia by epidemiological characteristics, 2013 to 2017**

<b>Year of diagnosis</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Number of notifications</b>	<b>61</b>	<b>45</b>	<b>44</b>	<b>44</b>	<b>32</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	16	15	15	10	11
Non-Indigenous	45	30	29	34	21
Not stated	0	0	0	0	0
<b>Sex</b>					
Female	21	16	20	22	8
Male	40	29	24	22	24
<b>Age-group</b>					
0-14	1	0	0	0	0
15-19	1	3	1	6	0
20-24	5	5	9	5	1
25-29	13	9	7	4	7
30-39	21	14	17	7	10
40-49	16	10	7	15	11
50-59	2	3	3	7	3
60+	2	1	0	0	0
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	56	40	42	41	30
North-West Europe	0	2	1	0	0
Southern and Eastern Europe	0	0	0	0	0
North Africa and the Middle East	2	0	0	0	0
South-East Asia	1	0	0	1	0
North-East Asia	0	0	0	0	0
Southern and Central Asia	0	0	0	0	0
Americas	0	0	0	0	0
Sub-Saharan Africa	0	0	0	0	0
Not reported	2	3	1	2	2

**Table 26 Risk markers, test information and notification source of people diagnosed with acute hepatitis C, South Australia, 2017**

<b>2017 notifications</b>	<b>Female</b>	<b>Male</b>	<b>Total</b>
<b>Number of notifications</b>	<b>8</b>	<b>24</b>	<b>32</b>
<b>Risk markers*</b>			
Injecting drug use	8	23	31
Tattooing	5	6	11
Imprisonment	0	6	6
Ear or body piercing	2	4	6
Sexual partner of opposite sex with known HCV	2	2	4
Household contact with known HCV	1	3	4
Non-occupational or unspecified injury	1	0	1
Sexual partner of same sex	0	1	1
No risks identified	0	1	1
<b>Reason for test</b>			
Abnormal liver function tests	0	7	7
<b>Drug/alcohol screening</b>	<b>3</b>	<b>4</b>	<b>7</b>
STI screening	1	4	5
Investigation of symptomatic hepatitis	2	3	5
Prison screening	2	2	4
Other	0	3	3
Unknown	0	1	1
<b>Notification source</b>			
Public hospital	1	9	10
<b>Metropolitan GP</b>	<b>1</b>	<b>7</b>	<b>8</b>
Country GP	1	3	4
Prison health service	2	2	4
Drug and alcohol services	2	1	3
Aboriginal health services	1	1	2
Other	0	1	1

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

## Hepatitis C (unspecified)

There were 397 notifications of HCV infection of unspecified duration in South Australia in 2017, a decrease compared to the five year average (2012-2016) of 458.4 infections per year (Figure 14).

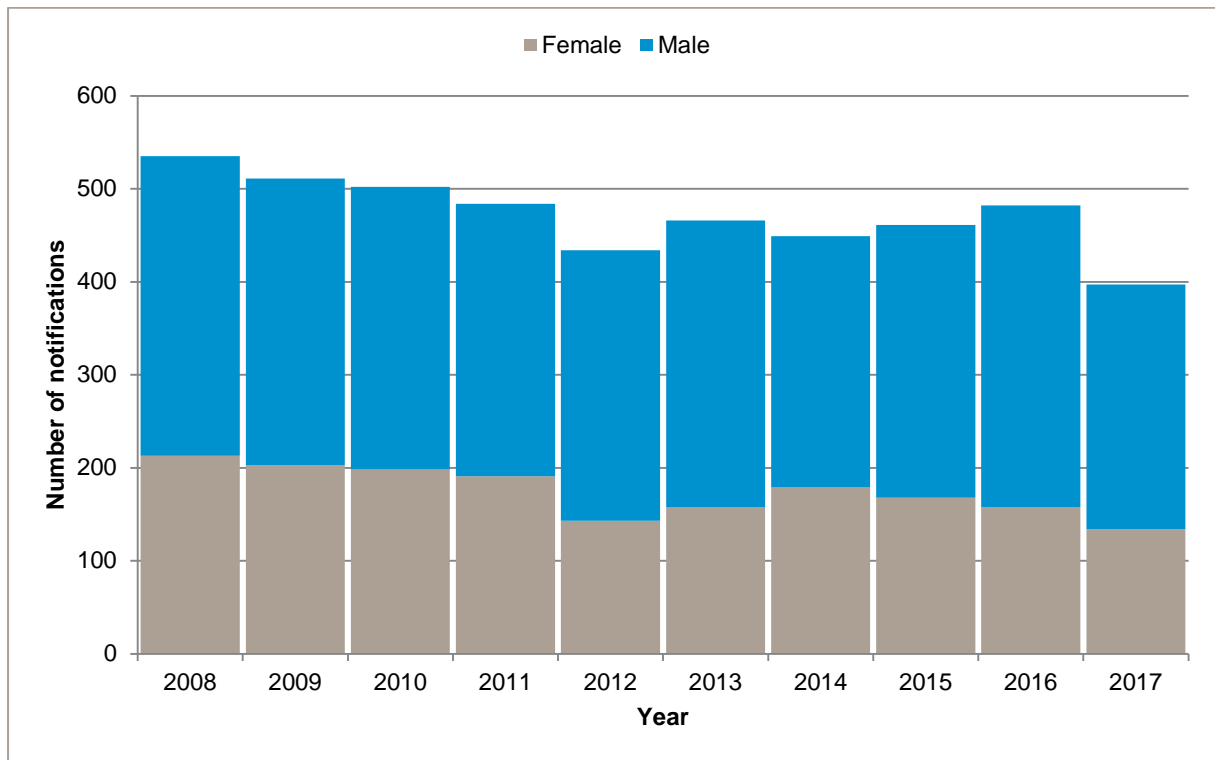
The notification rate for HCV of unspecified duration in 2017 was 23.1 per 100,000 population in 2017, a small decrease from the rate of 28.2 per 100,000 population in 2016. Fifty-nine notifications were among members of the Aboriginal population, 31 (53%) of whom were residents of metropolitan regions of South Australia, with the remaining from rural regions. Figure 15 demonstrates the higher notification rates in the Aboriginal population compared to the non-Indigenous population from 2013 to 2017.

Consistent with previous years, in 2017, 66% (263) of notifications were in males and 85% (338) of the notifications were among people aged 30 years and over. The majority of cases (279; 70%) were born in the major region of Oceania and Antarctica, including 275 that were Australian born (Table 27).

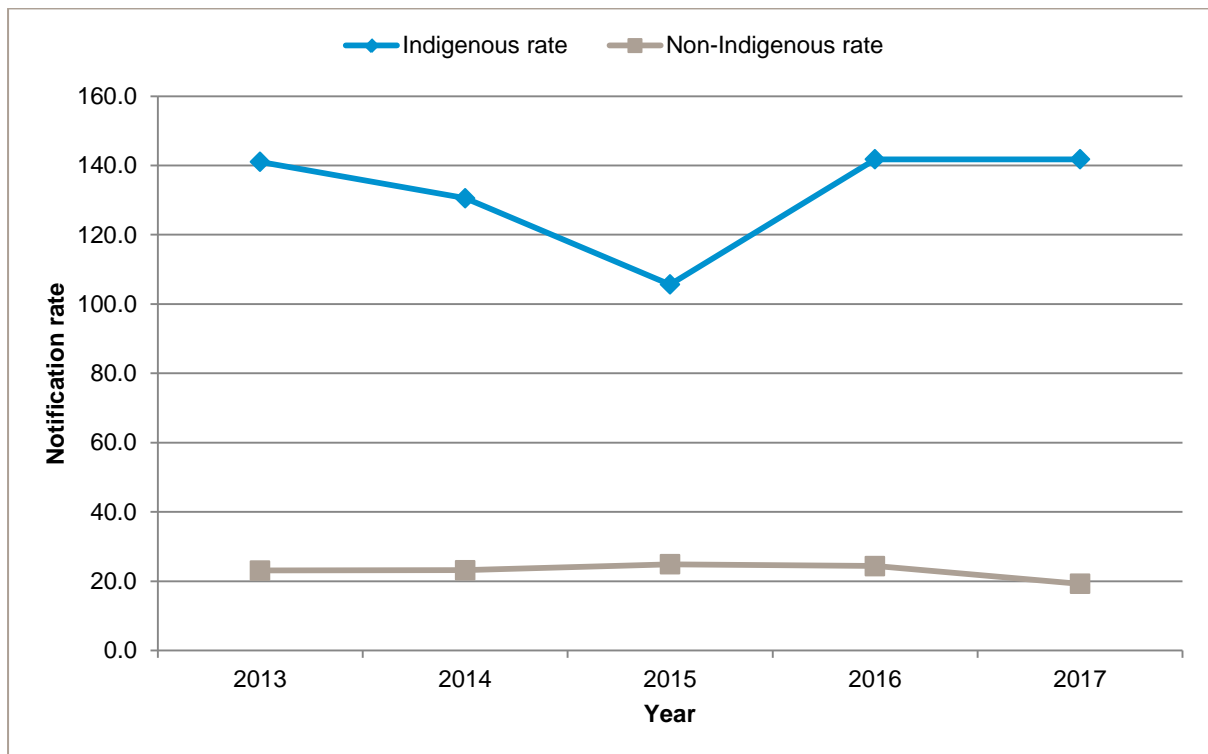
Table 28 outlines the identified risk markers, reasons for testing and notification source of unspecified hepatitis C notifications in 2017, by sex. The most commonly reported risk marker was injecting drug use (269; 68%), followed by tattoos (106; 27%) and imprisonment (61; 15%). Individuals can report more than one risk marker for their infection.

The most common reason for testing was abnormal liver function tests (71; 18%), followed by multiple types of screening tests including prison screening (67; 17%), STI/BBV screening (32; 8%) and drug and alcohol screening (23; 6%). The majority of cases were notified by metropolitan (135; 34%) and country GPs (77; 19%), followed by public hospitals (71; 18%) and prison health services (66; 17%) (Table 28).

**Figure 14** Number of diagnoses of unspecified hepatitis C infection in South Australia by sex, 2008 to 2017



**Figure 15** Unspecified hepatitis C notification rate per 100 000 population by Aboriginal status, South Australia, 2013 to 2017





**Table 27 Number of diagnoses of unspecified hepatitis C in South Australia by epidemiological characteristics, 2013 to 2017**

<b>Year of diagnosis</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Number of notifications</b>	<b>466</b>	<b>449</b>	<b>461</b>	<b>482</b>	<b>397</b>
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	55	52	43	59	59
Non-Indigenous	376	381	413	407	323
Not stated	35	16	5	16	15
<b>Sex</b>					
Female	158	179	168	158	134
Male	308	270	293	324	263
<b>Age-group</b>					
0-14	1	3	0	3	0
15-19	5	8	6	7	5
20-24	22	16	16	22	21
25-29	42	41	34	38	33
30-39	117	125	126	121	97
40-49	131	114	122	114	106
50-59	104	98	120	126	93
60+	44	44	37	51	42
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	309	304	343	331	279
North-West Europe	13	15	13	10	10
Southern and Eastern Europe	10	18	8	13	9
North Africa and the Middle East	13	7	6	9	6
South-East Asia	29	20	20	26	16
North-East Asia	6	10	4	7	1
Southern and Central Asia	18	20	23	12	20
Americas	4	2	3	2	0
Sub-Saharan Africa	3	3	3	6	4
Not reported	61	50	38	66	52

**Table 28 Exposure characteristics, test information and notification source of people diagnosed with unspecified hepatitis C infection, South Australia, 2017**

<b>2017 notifications</b>	<b>Female</b>	<b>Male</b>	<b>Total</b>
<b>Number of notifications</b>	<b>134</b>	<b>263</b>	<b>397</b>
<b>Risk markers*</b>			
Injecting drug use	78	191	269
Tattoos	35	71	106
Imprisonment	10	51	61
Ear or body piercing	34	23	57
Sexual partner of opposite sex infected	29	26	55
Household contact with same disease	23	27	50
Needle stick or biohazard injury non-HCW	4	13	17
Blood/blood products/tissues in Australia	5	8	13
Non-occupational or unspecified injury	2	4	6
Surgical work overseas	3	3	6
Acupuncture	3	9	12
Perinatal	3	2	5
Dental work overseas	1	1	2
Other	4	5	9
Unknown	22	37	59
<b>Reason for test</b>			
Abnormal liver function tests	18	53	71
Prison screening	11	56	67
STI/BBV screen	13	19	32
Drug/alcohol screen	8	15	23
Patient request	9	10	19
Antenatal screening	15	2	17
Treatment screen	7	8	15
Investigation of symptomatic hepatitis	3	3	6
Contact of a case	4	2	6
Injecting drug user screen	2	3	5
Migrant health screen	4	1	5
Unknown	8	19	27
Other	32	72	104
<b>Notification source</b>			
Metropolitan GP	49	86	135
Country GP	29	48	77
Public hospital	25	46	71
Prison health service	10	56	66
Drug and alcohol services	3	9	12
Sexual health service	2	6	8
Aboriginal health services	3	3	6
Private hospital	1	2	3
Other	12	6	18
Unknown	0	1	1

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

## 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 already infected with HBV. In Australia, HDV occurs epidemically among populations at high-risk of HBV infection. In Australia, notifications of HDV infection remain low.

In 2017, there were 10 new diagnoses of HDV infection notified in South Australia, equivalent to the five year average (2012-2016) of 10 notifications per year (Figure 16). The notification rate of HDV in South Australia was 0.58 per 100 000 population in 2017, and has remained stable over the past four years (Figure 17).

Notifications in 2017 were in six males and four females, similar to 2016. In 2017, one person diagnosed with HDV identified as Aboriginal. Nine of the 10 cases notified were born outside of Australia. The median age of cases notified in 2017 was 33 years (range 20 to 55 years) (Table 29).

Notifications came predominantly from public hospitals (six cases), with the others from metropolitan general practitioners (two) and one each from a migrant health service and an Aboriginal Community Controlled Health Service. Eight cases had residential addresses in the metropolitan Adelaide region at the time of their diagnosis.

Figure 16 Number of new diagnoses of hepatitis D in South Australia by sex, 2008 to 2017

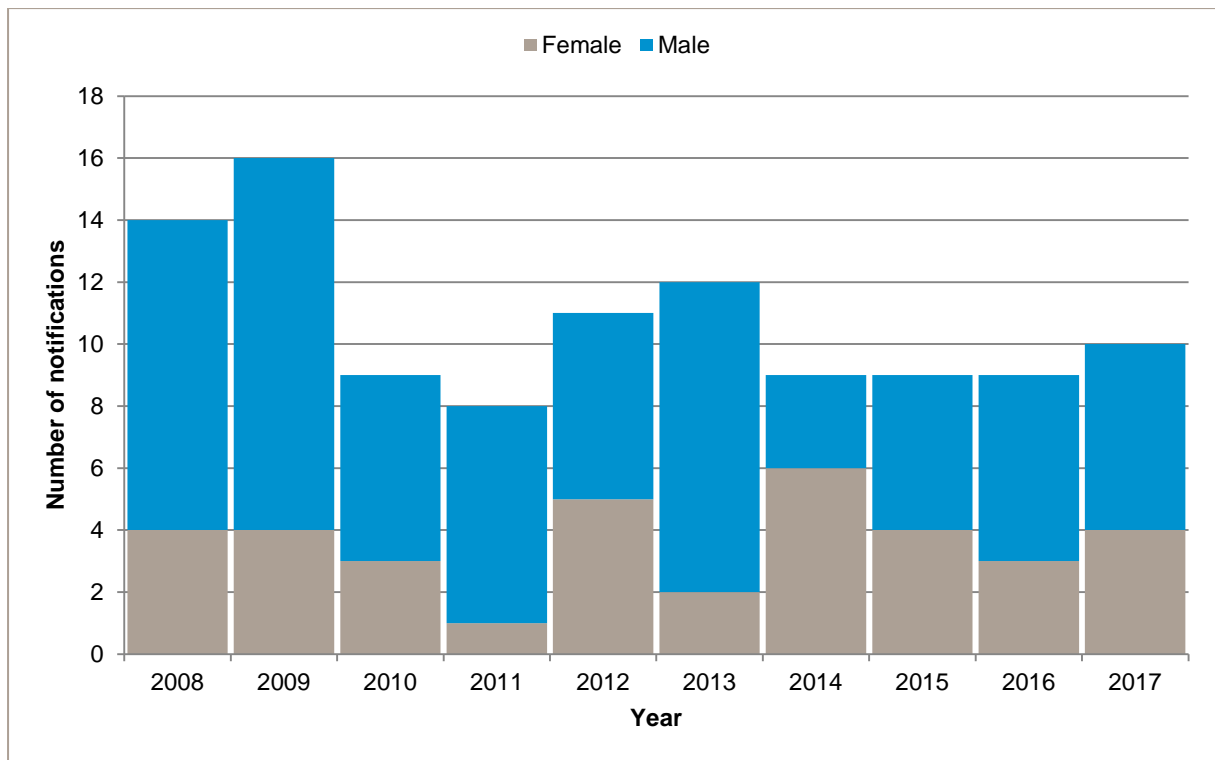
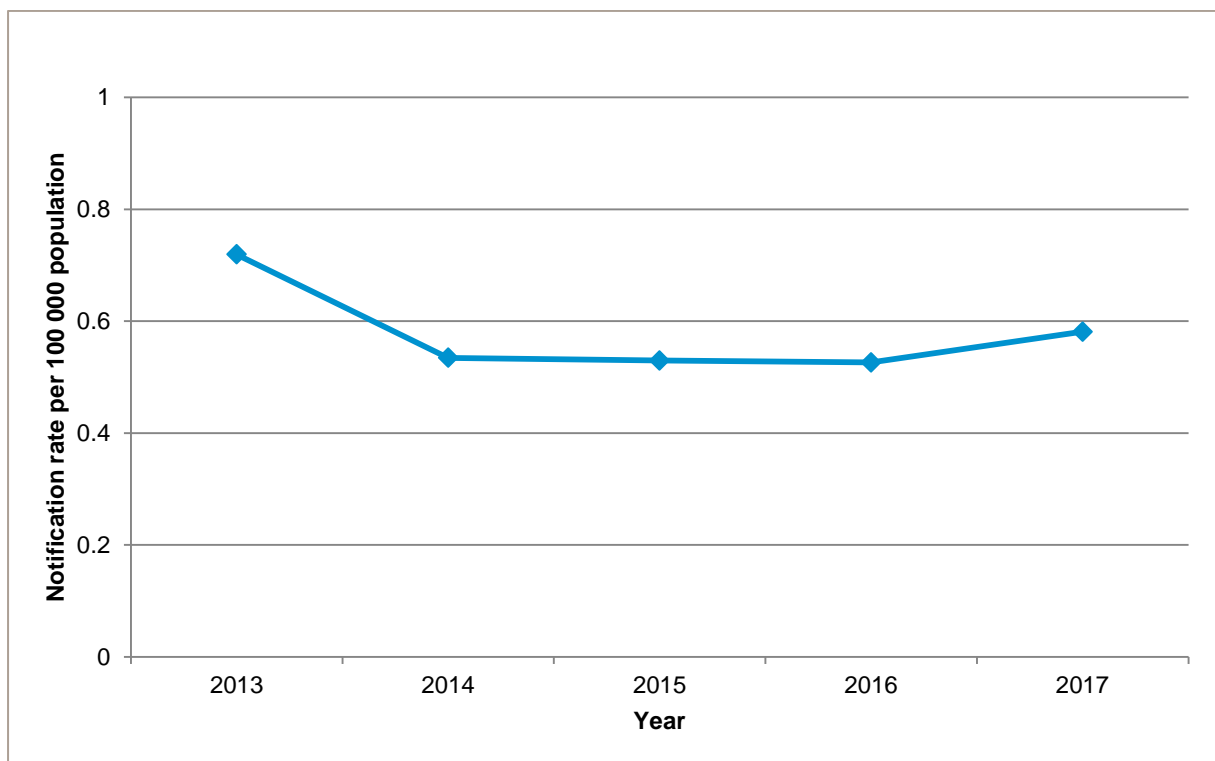


Figure 17 Hepatitis D notification rate per 100 000 population, South Australia, 2013 to 2017



**Table 29 Number of diagnoses of Hepatitis D in South Australia by epidemiological characteristics, 2013 to 2017**

<b>Year of diagnosis</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
<b>Number of notifications</b>	12	9	9	9	10
<b>Aboriginal and Torres Strait Islander status</b>					
Aboriginal	0	0	0	0	1
Non-Indigenous	12	9	9	9	9
<b>Sex</b>					
Female	2	6	4	3	4
Male	10	3	5	6	6
<b>Age-group</b>					
0-14	1	0	0	0	0
15-19	0	0	1	0	0
20-24	1	1	0	2	2
25-29	0	4	1	0	1
30-39	0	2	5	1	4
40-49	2	0	1	1	2
50-59	2	1	1	3	1
60+	0	1	0	2	0
<b>Country of birth (by major region)</b>					
Oceania and Antarctica	3	0	1	2	1
North-West Europe	0	0	0	0	0
Southern and Eastern Europe	1	1	0	1	1
North Africa and the Middle East	2	2	1	0	3
South-East Asia	2	1	2	2	2
North-East Asia	0	1	0	1	0
Southern and Central Asia	3	1	2	2	2
Americas	0	0	0	0	0
Sub-Saharan Africa	1	3	1	1	2
Not reported	0	0	2	0	0

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## For more information

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