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Communicable Disease Control Branch,  
Disease Surveillance & Investigation Section

# 2020 Annual Report

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This annual report was prepared by:

Thy Huynh and Ann Weaver

Disease Surveillance & Investigation Section

Communicable Disease Control Branch

SA Health

PO Box 6

Rundle Mall SA 5000

Telephone: 1300 232 272

Web: [www.sahealth.sa.gov.au/SurveillanceNotifiableConditions](http://www.sahealth.sa.gov.au/SurveillanceNotifiableConditions)

## Disclaimer

The data presented in this report were correct at the time of publication. Minor discrepancies with previous reports may occur as data adjustments are made retrospectively.

## Abbreviations

APY	Anangu Pitjantjatjara Yankunytjatjara
CDCB	Communicable Disease Control Branch
CJD	Creutzfeldt-Jakob disease
COVID-19	Coronavirus disease 2019
EHO	environmental health officer
Hib	<i>Haemophilus influenzae</i> type b
HUS	haemolytic uraemic syndrome
IMD	invasive meningococcal disease
MDU	Microbiological Diagnostic Unit
MERS	Middle East respiratory syndrome
MJOI	multi-jurisdictional outbreak investigation
MLST	multi-locus sequence type
MLVA	multi-locus variable tandem repeat analysis
NAT	nucleic acid test
NIDS	Notifiable Infectious Disease Surveillance Database
NNDSS	National Notifiable Diseases Surveillance System
NSW	New South Wales
NT	Northern Territory
PCR	polymerase chain reaction
RDNC	reaction did not conform
RRv	Ross River virus infection
SA	South Australia
SARS	severe acute respiratory syndrome
SNPs	single-nucleotide polymorphisms
STEC	Shiga toxin-producing <i>Escherichia coli</i>
STm	<i>Salmonella</i> Typhimurium
TTP	thrombotic thrombocytopenic purpura
WGS	whole genome sequencing

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## Summary

The collection and surveillance of notifiable conditions is conducted under the *South Australian Public Health Act 2011* and associated regulations. Medical practitioners and laboratories are required to report cases of most notifiable conditions to the Communicable Disease Control Branch (CDCB).

CDCB conducts state-wide surveillance for notifiable diseases enabling analysis of health data. Specified data are provided regularly to the National Notifiable Diseases Surveillance System. Summaries of notifiable diseases in South Australia (SA) are published on the SA Health website. Included are counts of notified conditions and information about current cluster and outbreak investigations, in addition to historical data.

CDCB undertakes, frequently in conjunction with partner agencies, public health actions to prevent the further spread of disease. Public health management is in accordance with the Series of National Guidelines and local Disease Surveillance and Investigation Guidelines. See [www.health.gov.au/cdnasongs](http://www.health.gov.au/cdnasongs).

The *South Australian Public Health Act 2011* provides the legislative authority to investigate and control notifiable conditions. Partner agencies may have legislative authority under other acts in South Australia (SA) such as the *Food Act 2001* (SA).

Additional expertise to investigate and control notifiable conditions may be utilised from other agencies including OzFoodNet Australia, Biosecurity SA of Primary Industries and Regions SA, environmental health officers (EHO) from local government, SA Pathology and other branches of the Department of Health and Wellbeing including Food Policy and Programs Branch, Health Protection Programs and Scientific Services Branch.

In response to the coronavirus disease 2019 (COVID-19) pandemic, on 20 March 2020 Australia closed its international borders to all non-citizens and non-residents, with exemptions only for Australian citizens, permanent residents, and their immediate family, including spouses, legal guardians and dependants. To reduce the spread of COVID-19 within South Australia, on 22 March 2020 the State Coordinator made a Declaration of a Major Emergency under the *Emergency Management Act 2004*. This resulted in the enforcement of restrictions such as limitations to public gatherings, introduced social distancing and at times full community lockdown measures to mitigate the spread. At times the Emergency Management Cross Border Travel (COVID-19) Direction 2020 was enacted, prohibiting travel interstate. These restrictions resulted in a reduction of cases for a large range of notifiable diseases for 2020 when compared to previous years.

Investigation and control activities included (but were not limited to) the response to:

- > 1,583 cases of influenza, including 1 influenza outbreak in a residential care facility
- > 580 cases of COVID-19, including multiple outbreak investigations that were undertaken in accordance with 2020 outbreak case definitions and public health management principles.
- > 217 cases of Shiga-toxin producing *Escherichia coli* infection
- > 58 cases of Ross River virus infection
- > 27 non-foodborne clusters of gastrointestinal disease, including 25 in residential care facilities
- > 11 cases of *Legionella pneumophila* serogroup 1 infection
- > 9 cases of Q fever
- > 8 foodborne cluster investigations including four *Salmonella* outbreak investigations, seven non-foodborne or non-notifiable disease investigations and one multi-jurisdictional outbreak investigation
- > 5 cases of invasive meningococcal disease
- > 3 cases of hepatitis A infection
- > 3 cases of typhoid fever
- > 2 cases of hepatitis E infection
- > 1 case of *Listeria monocytogenes* infection
- > 1 case of paratyphoid fever.

## Methods

Notification data from laboratories and medical practitioners were entered into and extracted for analysis from the SA Notifiable Infectious Disease Surveillance database (NIDS). Enteric notifiable disease data were extracted on 09 March 2021 by the calculated onset date from 1 January to 31 December 2020. The calculated onset date is the earliest date entered into NIDS; this may be the specimen date, signature date, laboratory confirmed date, notification date, or the current system date. All other notifiable condition data were extracted and reported by notification date which represents the date the case was first reported to CDCB. Data was extracted on 21 January 2021 for cases notified from 1 January to 31 December 2020. COVID-19 data was extracted from the situation report on COVID-19 cases and outbreaks published in January 2021.

SA continues to use the surveillance case definitions prepared by the Communicable Diseases Network Australia for the Australian National Notifiable Diseases Surveillance System (NNDSS). All case definitions are used with the exception of varicella infection where clinical diagnoses without laboratory testing are accepted in SA. See <https://www1.health.gov.au/internet/main/publishing.nsf/Content/cdna-casedefinitions.htm>

Australian Bureau of Statistics estimated residential population counts for June of each year were used in crude rate calculations and are expressed per 100,000 population.

Throughout the report the term '5-year average' refers to the mean from 2016 to 2020.

The data reported here is correct as of the time of publishing but is subject to change. Ongoing maintenance of datasets as investigations are finalised, new information is reported or as errors are resolved from data cleaning contributes to this variance.

Data related to mycobacterial diseases, sexually transmitted infections, blood-borne viruses, Carbapenemase-producing Enterobacterales, rheumatic fever and rheumatic heart disease are reported elsewhere.

## Enteric diseases

In 2020, gastrointestinal illnesses accounted for 20% of disease notifications in SA, compared to 14% of notifications in 2019. There were 3,953 cases of notifiable gastrointestinal disease reported in 2020. *Campylobacter* infection was the most commonly reported notifiable gastrointestinal disease in SA and accounted for 69% of these notifiable diseases.

### Botulism

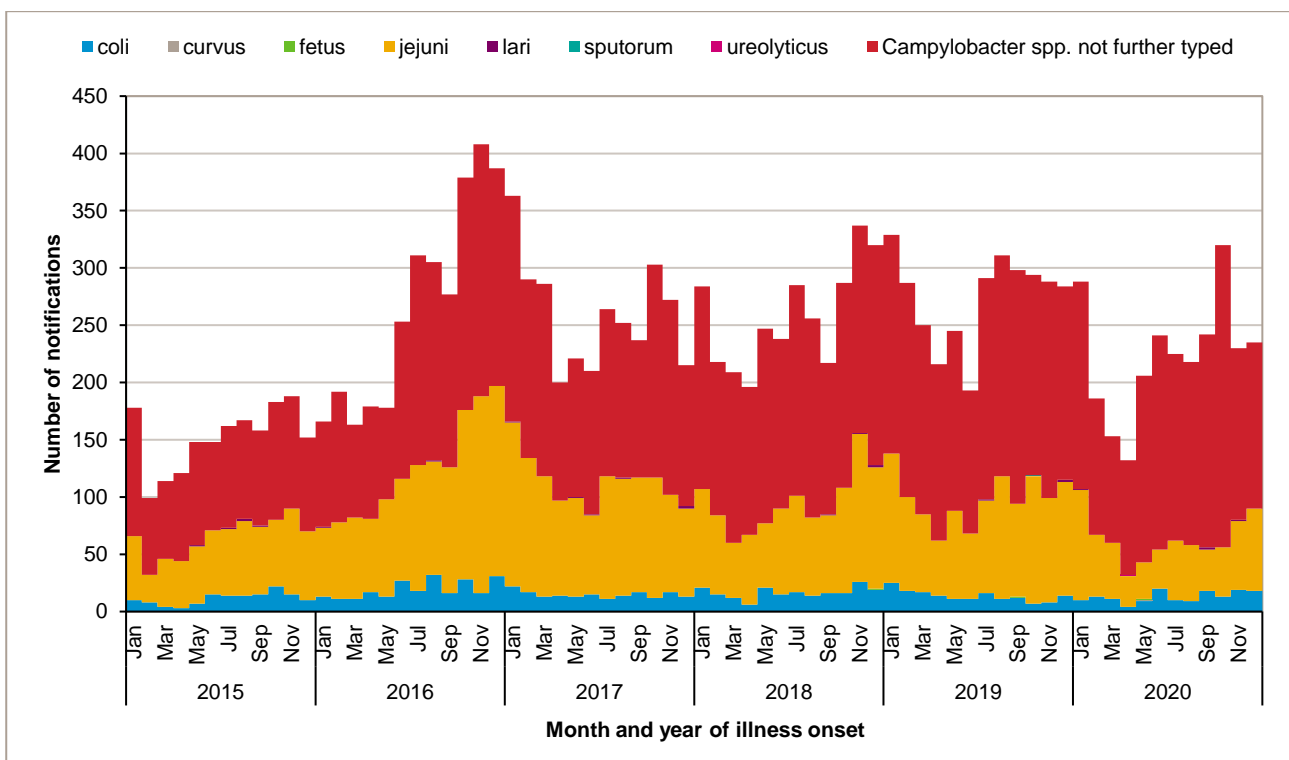
There were no cases of botulism in SA in 2020, compared to one case of infant botulism in 2019 and similar to the five-year average of less than one case per annum for the period of 2015 to 2019.

### *Campylobacter* infection

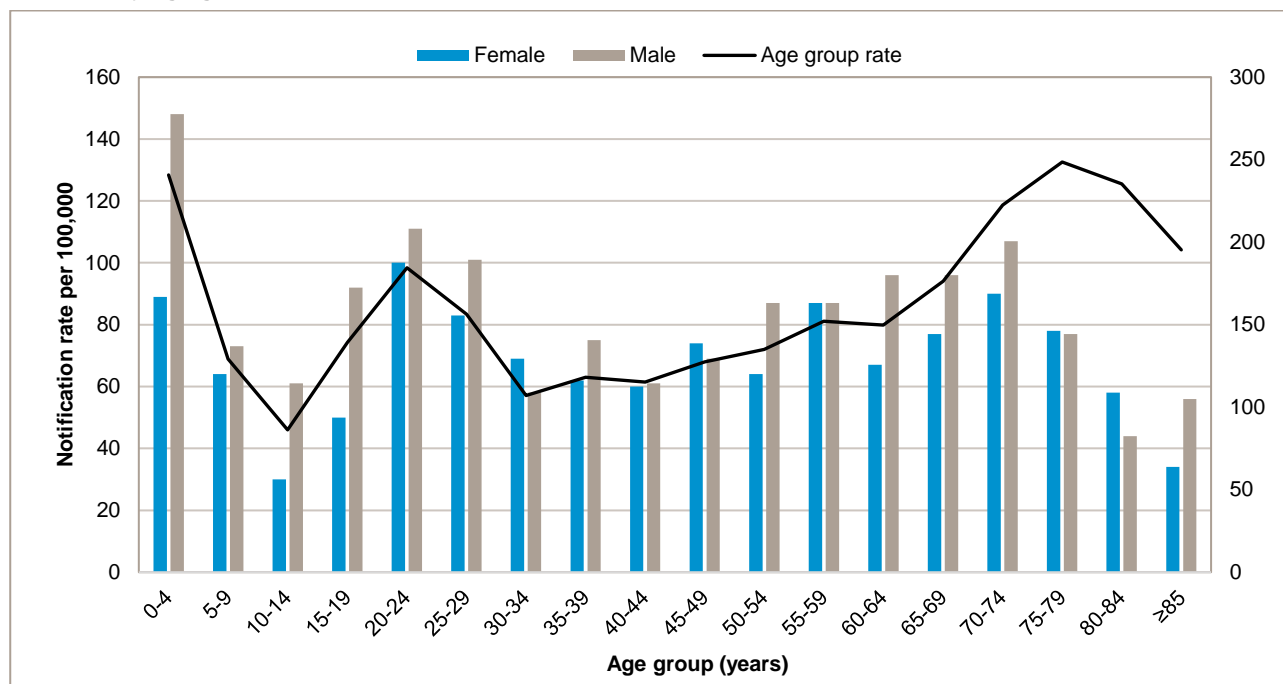
There were 2,731 notifications of *Campylobacter* infection in SA in 2020, compared with 3,287 in 2019 and a five-year average of 2,902 per annum for the period 2015 to 2019. (Figure 1).

Fifty-five percent of *Campylobacter* notifications in 2020 were in males. There were higher rates of notification amongst males in most of the five year age groups compared with females (Figure 2). The difference in rates between males and females was greatest in the younger age groups (those aged less than five years) and those aged 85 years and over. The highest rate in males was in children aged less than five years of age with 300 notifications per 100,000. The highest rate in females was in the 80-to-84-year age group with 271 notifications per 100,000 (Figure 2).

**Figure 1 Notified cases of *Campylobacter* infection by type, and month and year of illness onset, South Australia, 2015-2020**



**Figure 2 Notified cases of *Campylobacter* infection by age group and sex, and rate of notified *Campylobacter* infection by age group, South Australia, 2020**



At different time points between July 2014 and June 2016, diagnostic laboratories have introduced enteric nucleic acid test (NAT) testing. Polymerase chain reaction (PCR) testing is more sensitive than culture methods and a decrease over time in the proportion of culture positive only results has been observed. In 2020, 1,280 (47%) of *Campylobacter* notifications tested positive by PCR only; an increase compared to 2019 (40%) and 2018 (39%). The introduction of PCR testing is likely to have contributed to the increase in *Campylobacter* notifications from 2016 onwards.

In 2020, no outbreaks of campylobacteriosis were investigated ([Appendix 3](#)).

## Cholera

There were no cases of cholera notified in 2020. Cholera is a rarely reported disease in SA with only one case reported in the previous five years (in 2015) with illness acquired in Indonesia.

## Cryptosporidiosis

There were 129 cases of cryptosporidiosis reported in 2020, similar to the 128 notifications reported in 2019 and lower than the five-year average of 306 cases reported per annum for the period of 2015 to 2019 (Figure 3).

In 2020, cryptosporidiosis notifications were in 58 males and 71 females with an age range of less than one year to 84 years, and a median age of 25 years.

The highest number of cryptosporidiosis notifications occurred in children aged less than 10 years of age and these accounted for 27% of notifications. There were more notifications in males than females in cases aged 30 to 34 years, but more females than males were reported in cases aged 20 to 29 years (Figure 4).

Figure 3 Notified cases of cryptosporidiosis by month and year of illness onset, South Australia, 2015-2020

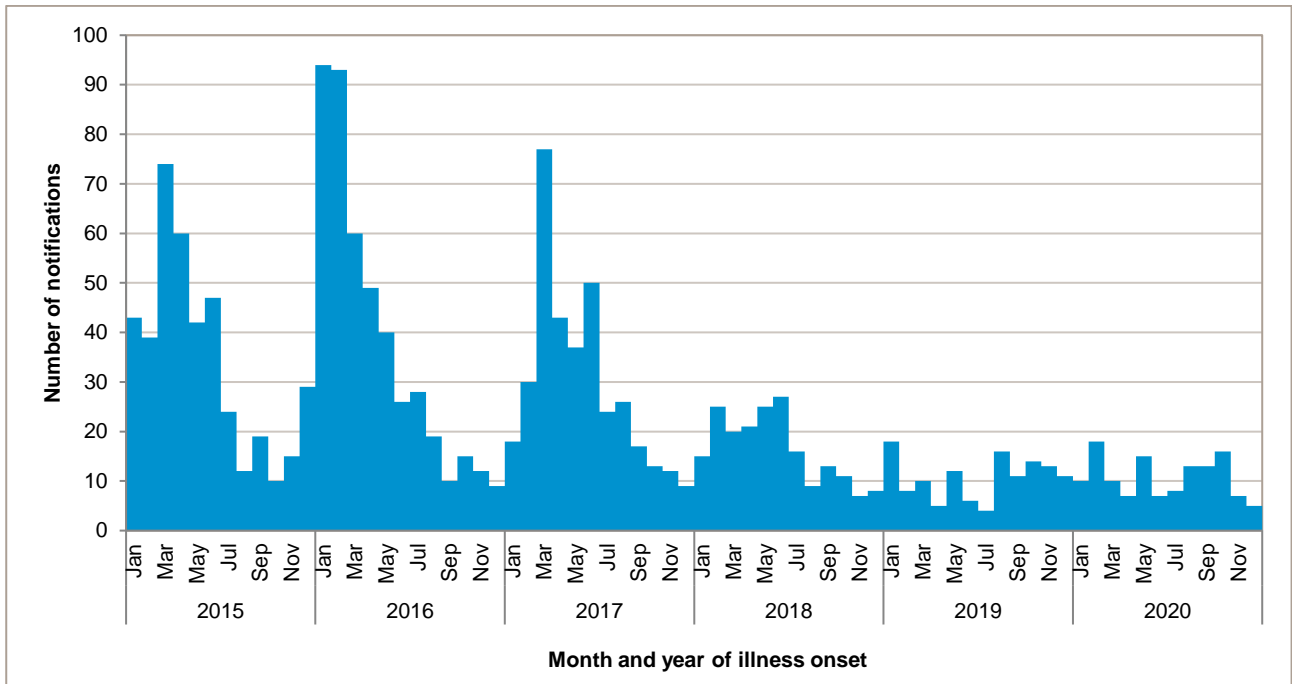
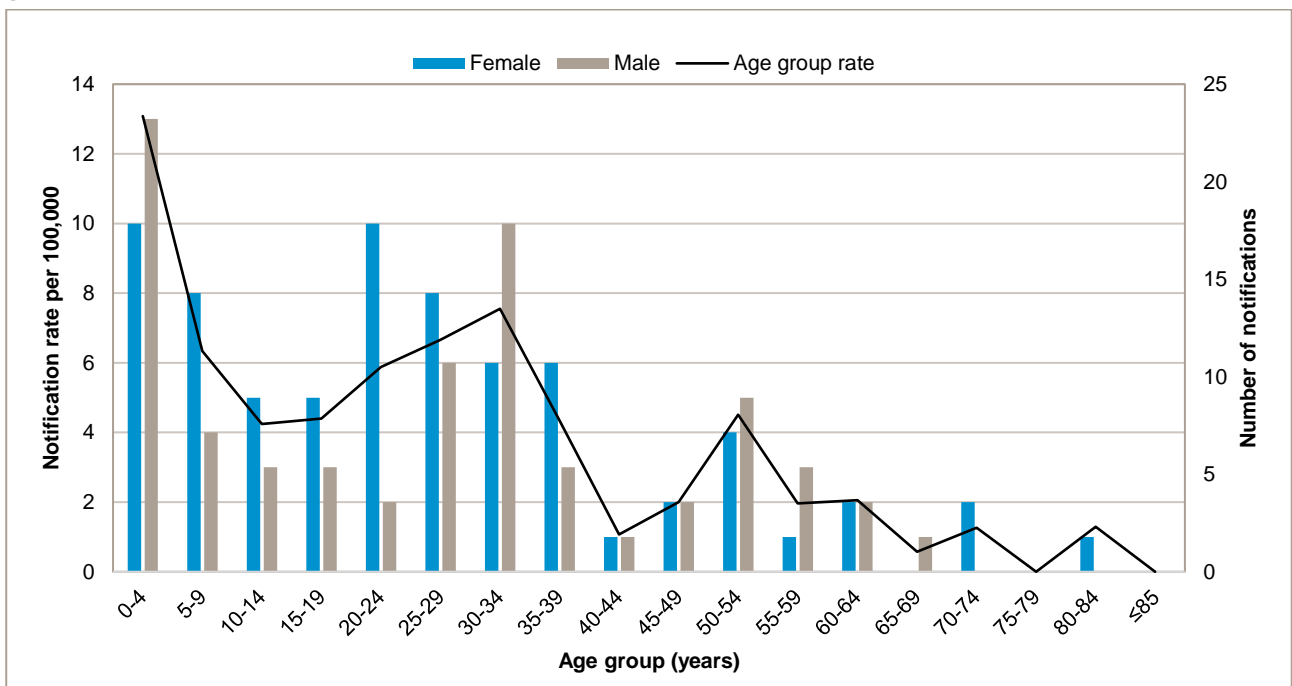


Figure 4 Notified cases of cryptosporidiosis by age group and sex, and rate of notified cryptosporidiosis by age group, South Australia, 2020



### Hepatitis A

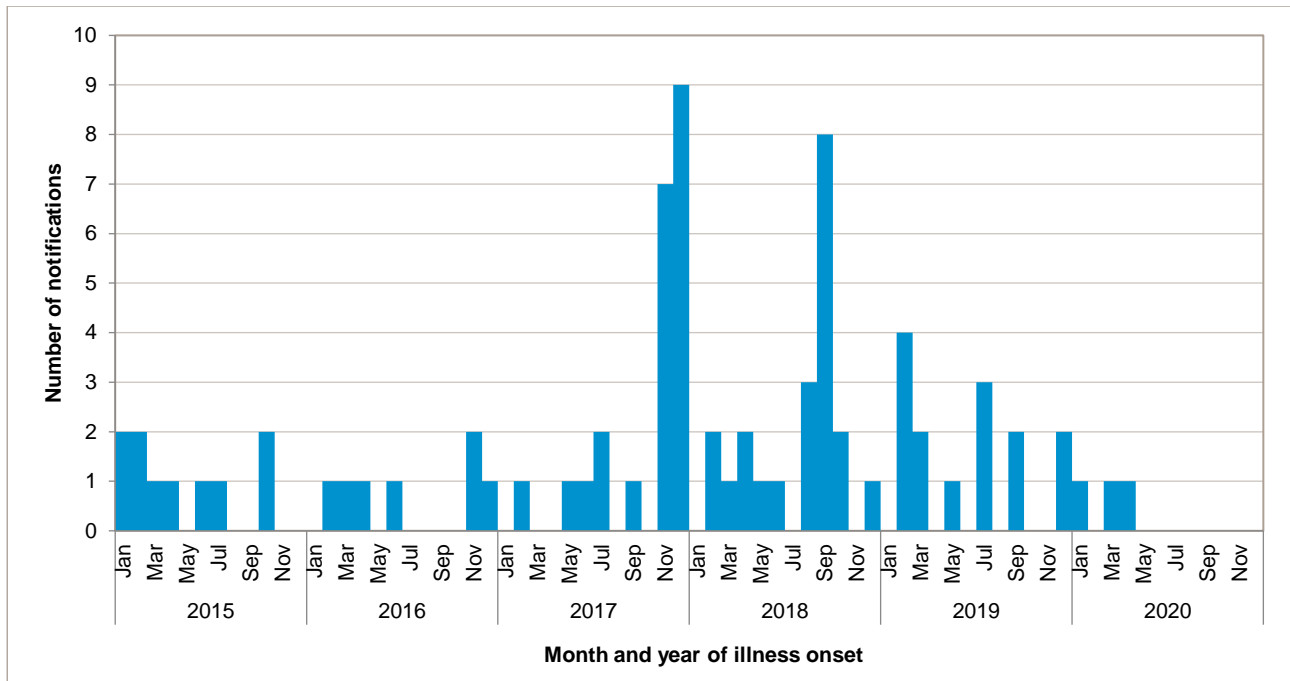
In 2020, there were three notifications of hepatitis A infection reported in SA, lower than the 14 notifications reported in 2019 and lower than the five-year average of 15 notifications per year for the period 2015 to 2019 (Figure 5).

Two cases were acquired overseas: one in India and one in Pakistan. One case was locally acquired with no risk factor identified. All three notifications were in males with an age range of 21 to 61 years and a median age of 26 years. Two cases of hepatitis A were hospitalised (67%) due to their infection. None of the cases identified as Aboriginal or Torres Strait Islander people. None of the cases were reported to be vaccinated against hepatitis A.

All cases of hepatitis A infection were interviewed, and vaccination was recommended for all susceptible household contacts, as appropriate.

There were no outbreaks of locally acquired hepatitis A in SA in 2020 ([Appendix 3](#)).

**Figure 5 Notified cases of hepatitis A infection by month and year of illness onset, South Australia, 2015-2020**



### Hepatitis E

There were two notifications of hepatitis E infection in SA reported in 2020, the same number as reported in 2019, and above the five-year average of 1 notification per year for the period of 2015 to 2019. The cases were in a 35 year old male and a 40 year old female, both acquired in India. The majority (78%) of hepatitis E cases notified since 2015 have been acquired overseas.

### Listeriosis

There was one notification of listeriosis reported in SA in 2020, compared to two notifications in 2019, and less than the five-year average of four cases for the period 2015 to 2019. The case notified in 2020 was an 84 year old female with *L. monocytogenes* isolated in a blood culture. The case had underlying health conditions and consumed several foods that were potentially high risk for listeriosis. No specific source for her illness was identified.

Further molecular based typing of the listeria isolate from the 2020 case was conducted at the Microbiological Diagnostic Unit (MDU) in Victoria. Based on molecular typing, it is unlikely that the case was linked to cases in other jurisdictions.

### Salmonella infection

There were 673 notifications of *Salmonella* infection reported in SA in 2020, less than the 1,177 notifications in 2019 and below the five-year average of 1,328 notifications per year for the period 2015 to 2019 (Figure 6). Seventeen per cent of gastrointestinal notifications this year were due to *Salmonella* infection.

In 2020, there were 376 notifications of salmonellosis in females and 297 notifications in males with an age range of less than one year to 100 years, and a median age of 29 years. The rate of notification in females was 42 per 100,000 population, and in males there were 34 notifications per 100,000 population. The age and sex distribution shows that the rate of notifications was highest in children aged less than five years of age and was higher in females (153 per 100,000) than males (118 per 100,000) (Figure 7).

Figure 6 Notified cases of *Salmonella* infection by month and year of illness onset, South Australia, 2015-2020

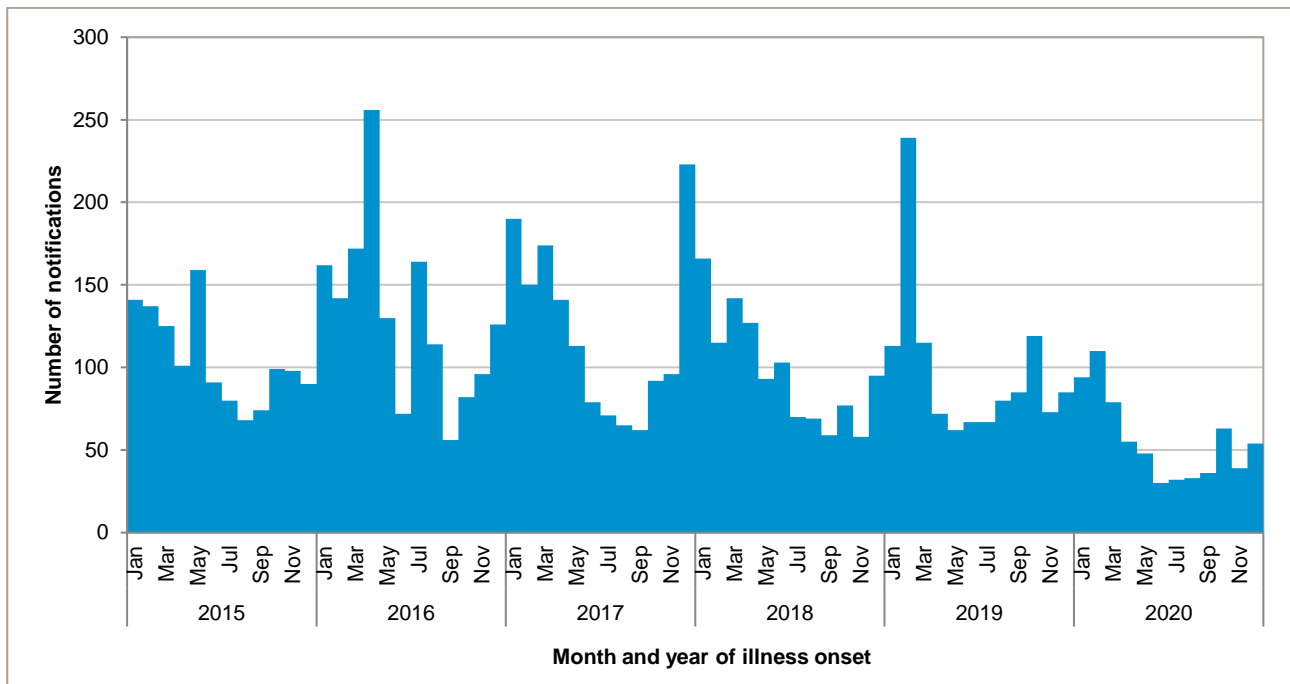
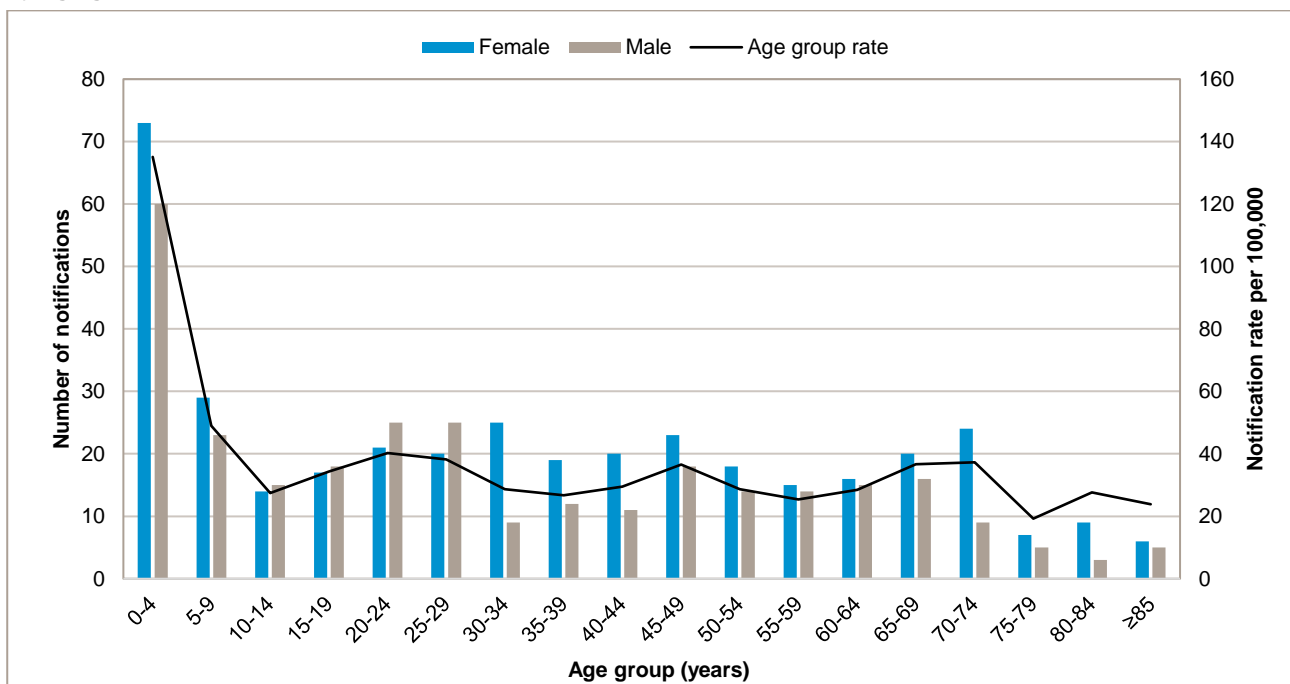


Figure 7 Notified cases of *Salmonella* infection by age group and sex, and rate of notified *Salmonella* infection by age group, South Australia, 2020



In 2020, *Salmonella* Typhimurium phage types 9, 135 and reaction does not confirm (RDNC) were the most common phage-types notified and accounted for 31% of notifications (Table 1). The most common non-Typhimurium *Salmonella* serovars were *Salmonella* not further typed (no serotype) (8%) and *S. Hessarek* (6%).

In 2020, there were 13 notifications of *S. Enteritidis* in SA, lower than the 64 notifications reported in 2019 and lower than the five-year average of 64 cases per annum for the period 2015 to 2019. Cases were in eight females (62%) and five males (38%) with an age range of 18 to 69 years, and a median age of 44 years. The majority of *S. Enteritidis* cases in 2020 (77%) had travelled overseas during their incubation period with the most common travel destination being Asia. Of those cases acquiring their infections overseas, six (46%) had travelled to Indonesia. This is consistent with previous years, as 92% of *S. Enteritidis* notifications in the five-year period 2015-2019 were acquired overseas.

In 2020, four outbreaks of *Salmonella* infection were investigated ([Appendix 3](#)). Three outbreaks were directly linked to eating at or takeaway from a bakery or restaurant and one was linked to primary production. In 2020, one multi-jurisdictional outbreak and seven *Salmonella* clusters were also investigated.

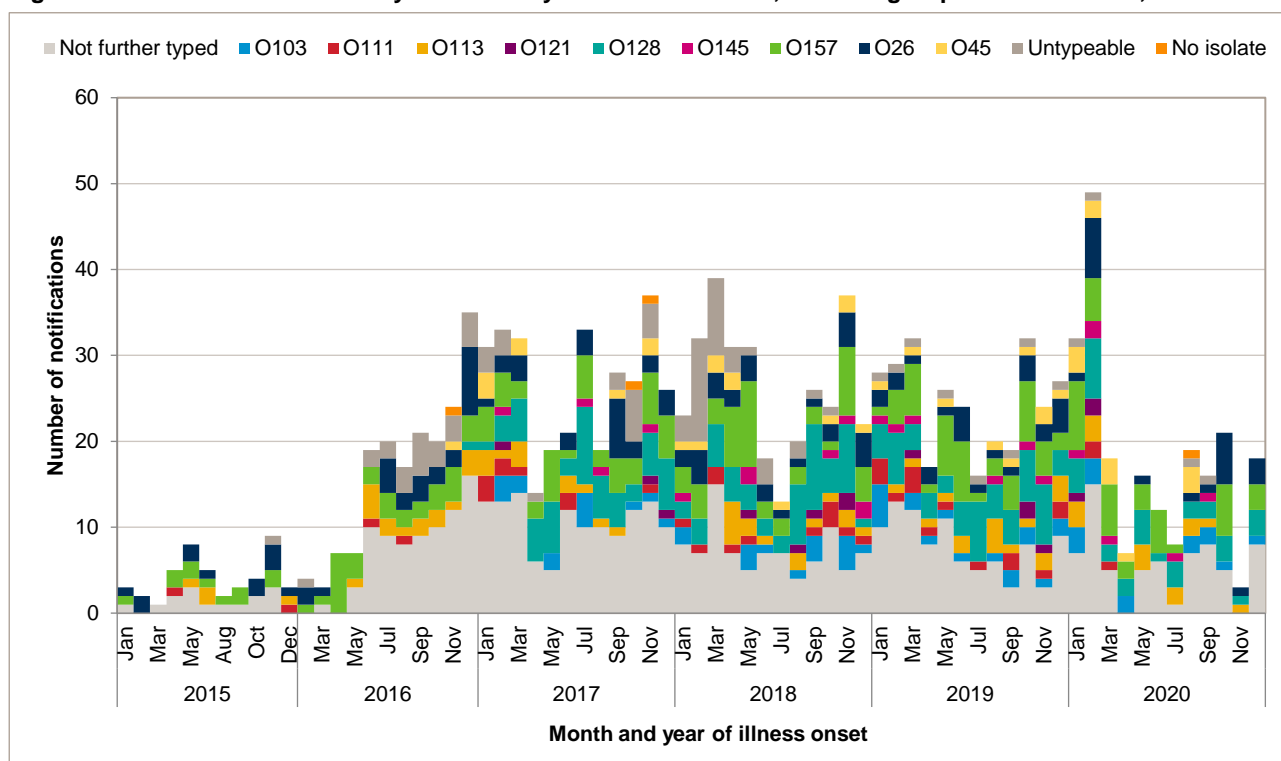
**Table 1 The ten most commonly notified *Salmonella* serovars or phage types, South Australia, 2020**

<i>Salmonella</i> serovar or phage type	Cases
S. Typhimurium 9	106
S. Typhimurium 135	61
S. Not further typed (no serotype)	57
S. Typhimurium reaction does not confirm (RDNC)	39
S. Hessarek	38
S. Saintpaul	35
S. Virchow	29
S. Muenchen	21
S. Infantis	17
S. Bovismorbificans	14
S. Enteritidis	13
Other	243
<b>Total</b>	<b>673</b>

### Shiga toxin-producing *E. coli* infection (STEC)

There were 217 notifications of STEC infection reported in SA in 2020; compared to 294 cases in 2019 and the five-year average of 230 notifications per year for the period 2015 to 2019 (Figure 8).

**Figure 8 Notified cases of STEC by month and year of illness onset, and serogroup South Australia, 2015-2020**



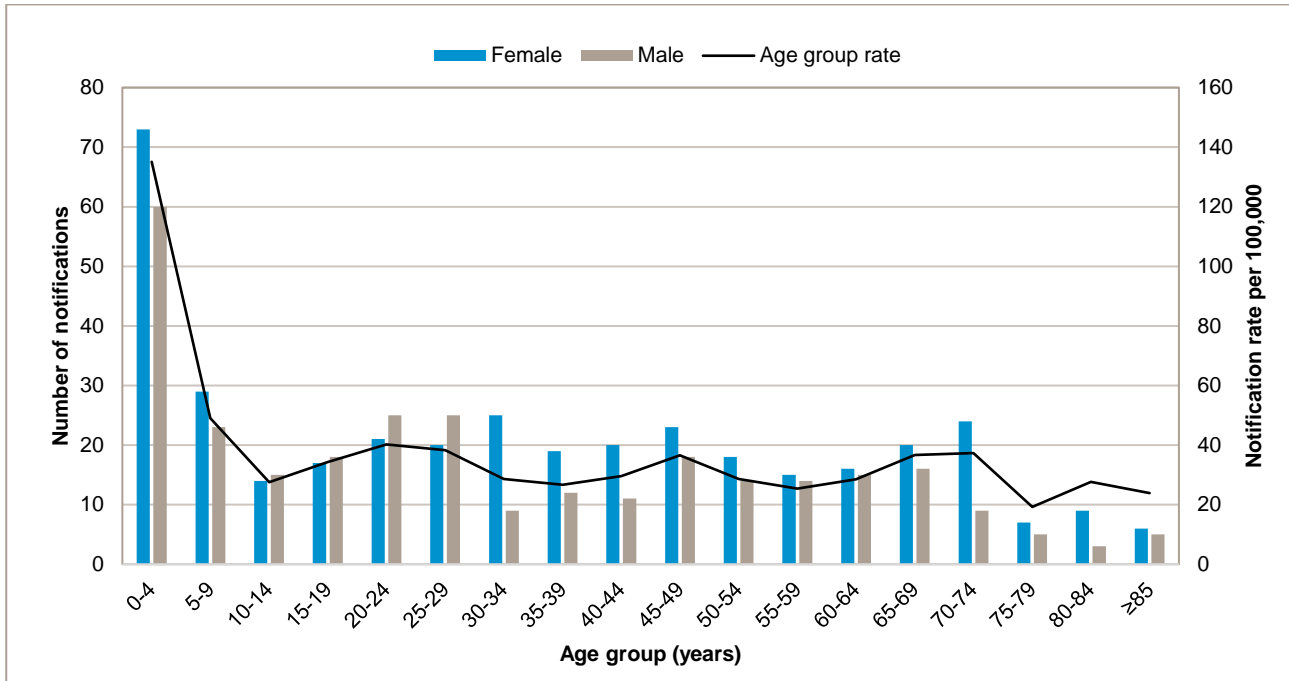
STEC testing is performed by only one laboratory in SA and in June 2016 this laboratory changed testing practices to test all faeces samples for STEC as a component of a nucleic acid test bacterial pathogen panel, where previously testing was conducted only if STEC testing was requested or if blood was present in the sample. This change has contributed to a large increase in the number of STEC cases notified to CDCB since June 2016.



In 2020, there were 23 (12%) people who were co-infected with two or more different serogroups of STEC. There were 106 females and 80 males with STEC infection. The age range was from one month to 95 years (median age 40 years) (Figure 9).

In 2020 the three most common serogroups notified were O157 (39 cases; 18%), O128 (34 cases; 16%) and O26 (21 cases; 10%) (Figure 8). There were 70 (32%) cases for which the serogroup was not determined, either because the serogroup of the infection was not included on the multiplex PCR panel (66 cases; 30%) or because the amount of DNA in the specimen was below the limit of detection of the multiplex PCR (four cases; 2%).

**Figure 9 Notified cases of STEC infection by age group and sex, and rate of STEC notified by age group, South Australia, 2020**



### Haemolytic uraemic syndrome

There was one notification of haemolytic uraemic syndrome (HUS) reported in 2020, compared to no cases in 2019. HUS is a rarely reported disease with a five-year average of less than one case per year for the period of 2015 to 2019. The case notified in 2020 was a one-year-old female who tested positive to STEC O26.

### Shigella infection

Enteric PCR panel testing includes the detection of *Shigella* and shares the same target genes with enteroinvasive *E. coli*; thus, differentiating between the two organisms is difficult. In SA, a probable case definition has been used for cases reported since 2014 to differentiate confirmed *Shigella* culture notifications from probable *Shigella*/enteroinvasive *E. coli*.

In 2020, 122 cases of *Shigella* infections were notified, consisting of 42 confirmed and 80 probable cases. This is lower than in 2019, when 283 cases of *Shigella* infection were notified (59 confirmed and 224 probable cases). The five-year average of confirmed cases is 58 cases per annum for the period of 2015 to 2019 (Figure 10).

In 2020, *Shigella* infections (confirmed and probable) were in 50 females and 72 males with an age range of less than one year to 88 years, and a median age of 30 years. Of the confirmed *Shigella* cases, there were 15 females and 27 males with an age range of less than one year to 72 years and a median age of 32 years (Figure 11).

Figure 10 Notified cases of shigellosis by confirmation status, and month and year of illness onset, South Australia, 2015-2020

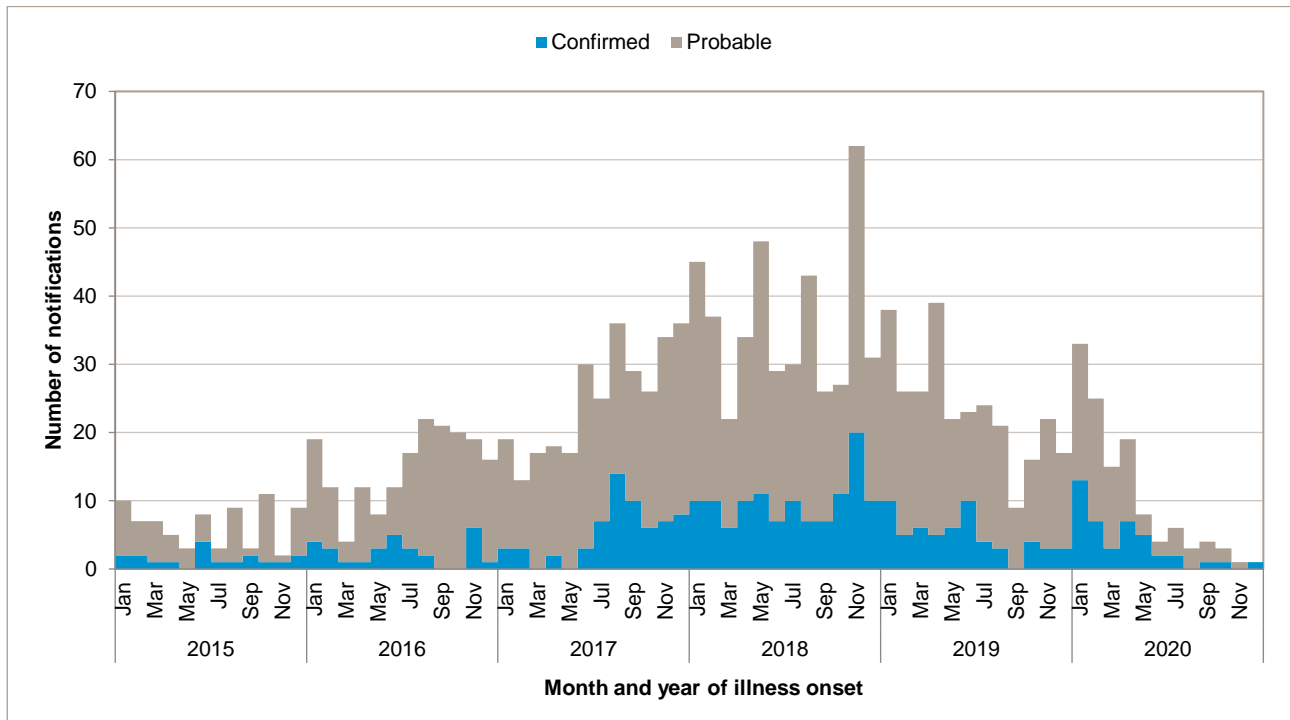
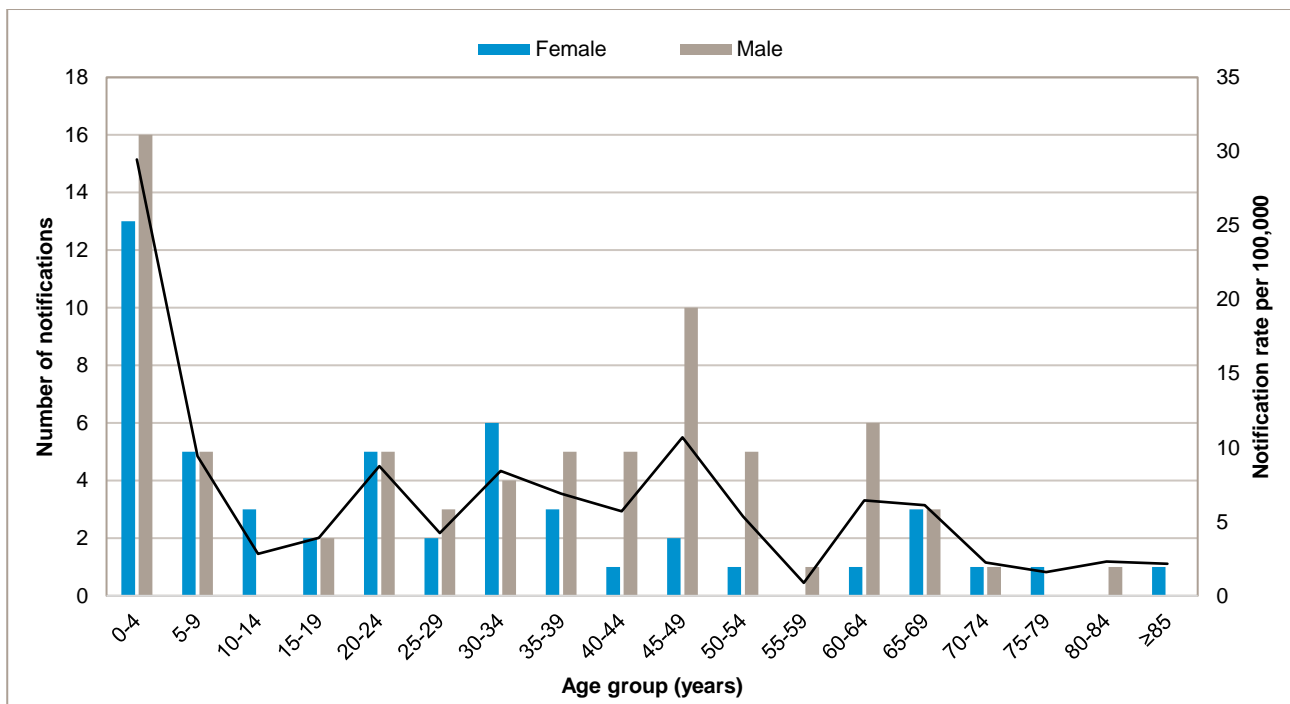


Figure 11 Notified cases of *Shigella* infection by age group and sex, and rate of notified *Shigella* infection by age group, South Australia, 2020



Forty-eight per cent of confirmed shigellosis cases in 2020 occurred in those who identify as Aboriginal and Torres Strait Islander people, compared with 58% in 2019. The majority (90%) of these Aboriginal and Torres Strait Islander people were residents of remote or rural regions in SA. A prolonged increase in *Shigella* cases in the far north and far west of SA was seen from 2017 through to mid-2020.

*Shigella sonnei* biotype g was the most common species and subtype reported in 2020 with 19 cases (45%). Of the 19 *S. sonnei* biotype g cases in 2020, 18 were classified as multi-drug resistant (MDR) infections. All MDR infections were in adult males aged 21 to 72 years (median 47 years), and all were acquired in Australia. Eleven cases reported male to male sex as a risk factor for their infection, and no risk factor was

identified for the remaining seven cases. One case that was not a MDR infection was acquired overseas in Indonesia.

Overseas travel was reported by 21 cases of *Shigella* infection in 2020, including three confirmed and 18 probable cases. Of confirmed cases, seven percent of *Shigella* cases reported overseas travel, compared to 24% in 2019.

Since July 2014, CDCB has been receiving laboratory notifications for *Shigella* that are PCR positive. Different laboratories have introduced this test at different time points; specifically, one laboratory introduced the test in July 2014, one in May 2015 and one in June 2016. Most of the cases (66%) reported in 2020 were PCR positive only, 31% were culture and PCR positive, and one percent were culture positive only.

### Typhoid

There were three notifications of *Salmonella* Typhi in SA in 2020 compared to ten in 2019 and a five-year average of seven cases per annum for the period 2015 to 2019.

In 2020, *Salmonella* Typhi infection notifications were in one female and two males with an age range of four to eight years, and a median age of eight years. All cases reported overseas travel during their incubation period; one case acquired their illness in India, one in Pakistan and one in Papua New Guinea (Table 2). This is consistent with previous years, as 94% of notifications in the five-year period 2015 to 2019 were acquired overseas.

All cases of *Salmonella* Typhi infection were interviewed, and contacts were screened for carriage or infection as per the national guidelines. In 2020, no secondary cases were identified.

### Paratyphoid

There was one notification of *Salmonella* Paratyphi infection reported in SA in 2020 compared with 13 in 2019, which was below the five-year average of eight cases per year for the period 2015 to 2019.

The case was hospitalised, and the infection was acquired in India (Table 2).

Contact tracing of the *Salmonella* Paratyphoid case occurred, and no secondary cases were identified.

This is consistent with previous years, as 80% of notifications in the five-year period 2015 to 2019 were acquired overseas.

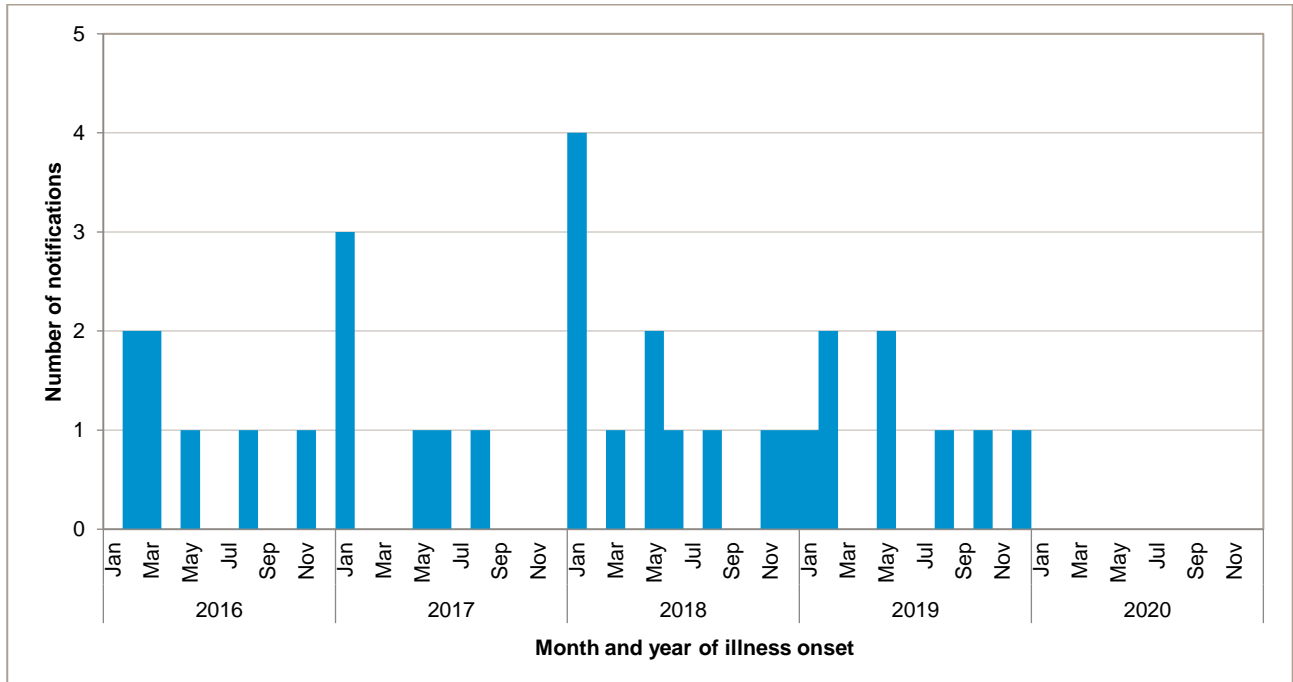
**Table 2 Notified cases of typhoid and paratyphoid by likely country of acquisition, South Australia, 2020**

Likely country of acquisition	Typhoid	Paratyphoid
India	1	1
Papua New Guinea	1	0
Pakistan	1	0
<b>Total</b>	<b>3</b>	<b>1</b>

### *Vibrio parahaemolyticus* infection

*Vibrio parahaemolyticus* infection became notifiable in SA on 18 February 2016. There were no notifications of *V. parahaemolyticus* in SA in 2020 compared to eight in 2019 and the four-year average of eight cases per year for the period 2016 to 2019 (Figure 12). This is consistent with previous years, as 56% of cases notified from 2016 to 2019 were acquired overseas.

Figure 12 Notified cases of *Vibrio parahaemolyticus* by month and year of illness onset, South Australia, 2016-2020



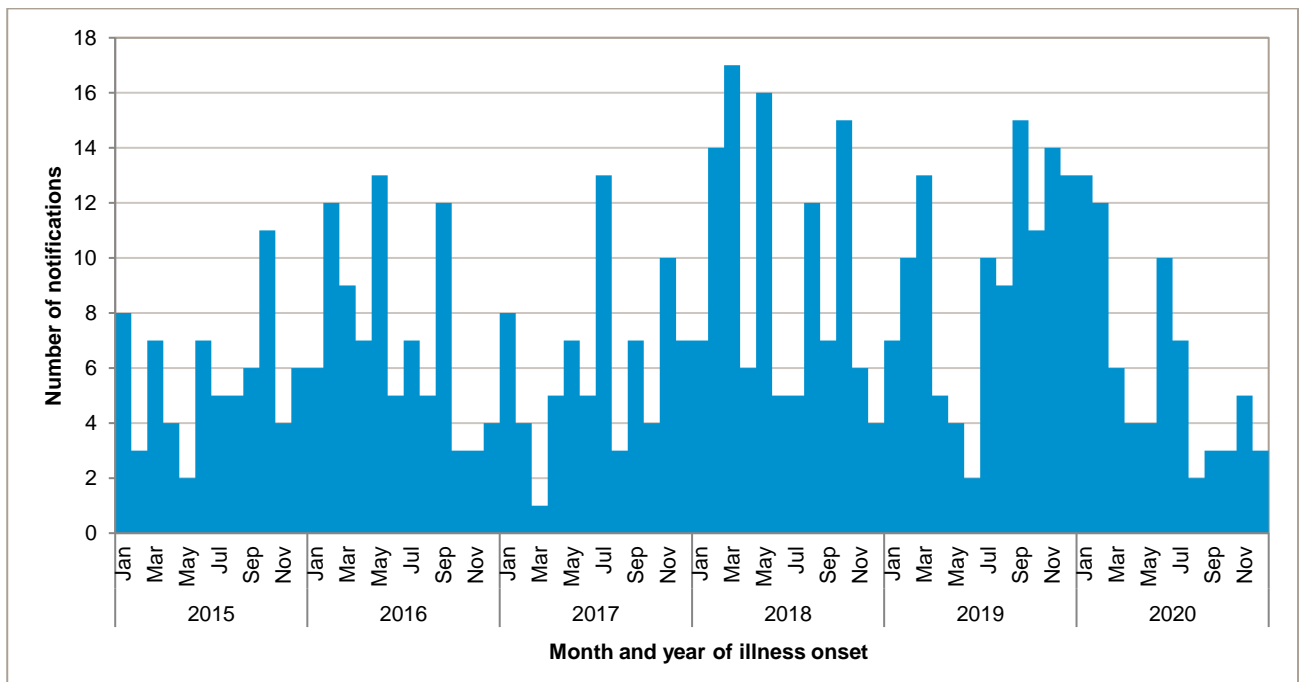
### Yersiniosis

There were 70 notifications of *Yersinia* infection in 2020, reported in SA, compared to 114 in 2019 and a five-year average of 91 notifications per year for the period 2015 to 2019 (Figure 13).

In 2020, *Yersinia* infection notifications were in 45 females and 25 males, with an age range of less than one year to 96 years and a median age of 48 years. Of the 70 cases, all were characterised as *Y. enterocolitica*.

The introduction of PCR testing by one laboratory in July 2014 and another laboratory in December 2015 has contributed to the increase in cases over the period. In June 2016, the main public health laboratory commenced using a PCR panel for enteric bacteria which did not include testing for *Yersinia*. Whilst the sensitivity of the surveillance system has increased with the introduction of PCR testing, further laboratory testing to characterise isolates by biotype has ceased, which impedes the detection of clusters.

Figure 13 Notified cases of yersiniosis by month and year of illness onset, South Australia, 2015-2020



## Quarantinable diseases

There were no cases of avian influenza in humans, Middle East respiratory syndrome (MERS), plague, severe acute respiratory syndrome (SARS), smallpox, viral haemorrhagic fever including Ebola virus infection, or yellow fever reported in 2020.

### Coronavirus disease 2019 (COVID-19)

Coronavirus disease (COVID-19) became notifiable in SA on 28 January 2020. In 2020 a total of 580 cases of COVID-19 were notified (Figure 14). Cases included 285 females (49%) and 294 males (51%). The age range of the cases was eight months to 85 years, with a median age of 48 years (Figure 15). Three cases identified as Aboriginal or Torres Strait islander people. There were four deaths reported in three males aged 74, 75 and 76 years and one female aged 62 years old.

Overall, 393 (68%) cases acquired their infections overseas (Table 3), while 13 cases (2%) acquired their infection interstate. The remaining 174 cases (30%) acquired their infections within SA, with 165 of these cases epidemiologically linked to other known cases or outbreaks within SA. Outbreak investigations were undertaken when the 2020 outbreak case definition was met. For further information about COVID-19 case and outbreak investigations, refer to the [SA Health website](#).

**Figure 14 Notified cases of COVID-19 by confirmation status, and month of notification, South Australia, 2020**

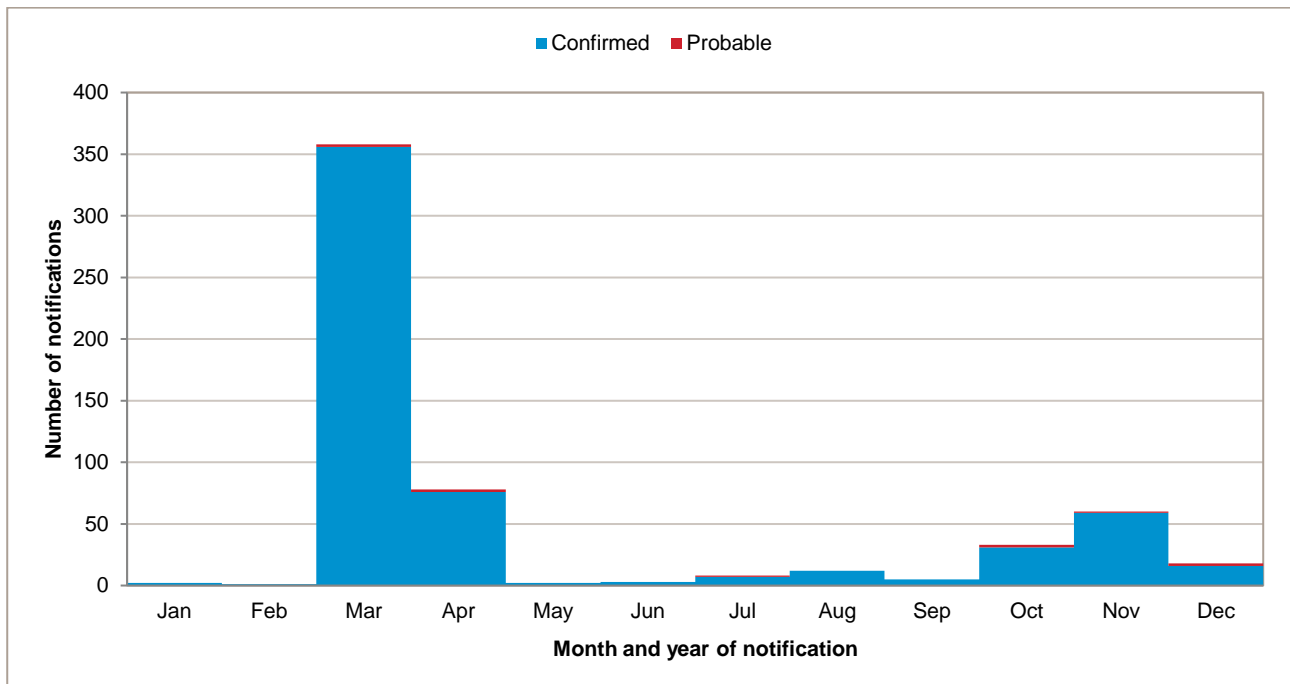


Figure 15 Notified confirmed cases of COVID-19 by age group and sex, and rate of notified cases of COVID-19 by age group, South Australia, 2020

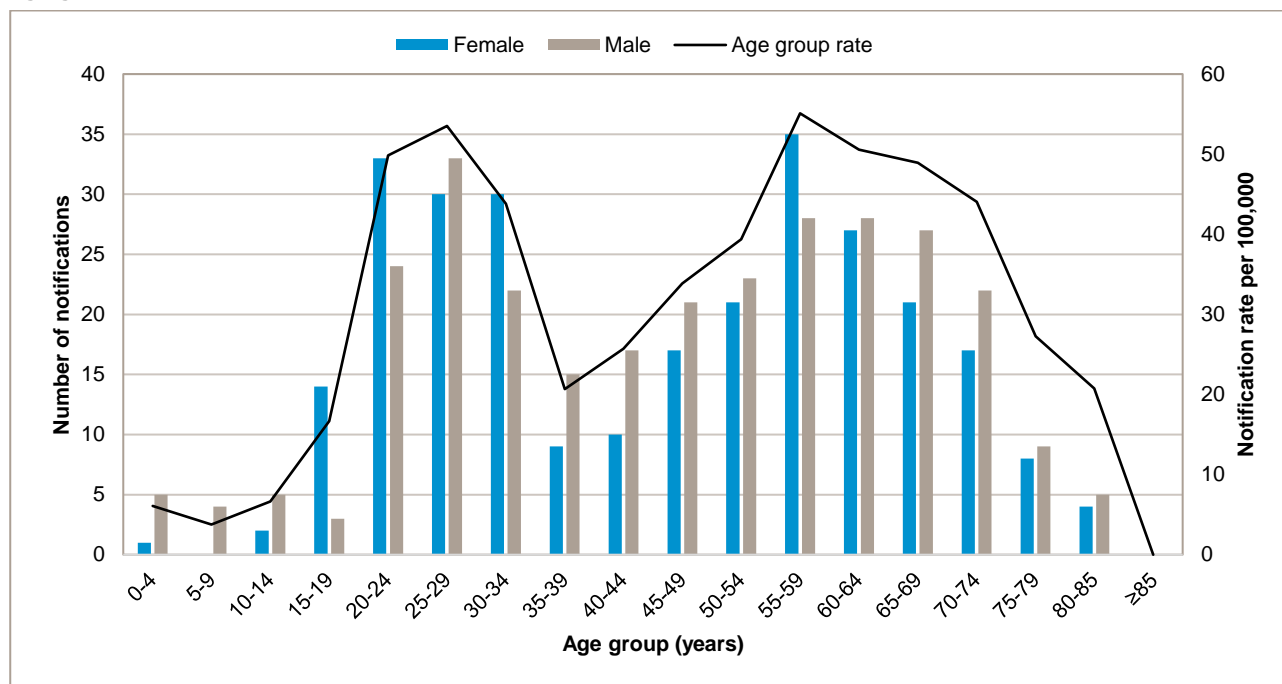


Table 3 Overseas-acquired confirmed and probable cases of COVID-19 by likely country of acquisition, South Australia, 2020

Likely region of acquisition	Total
Americas	48
At Sea	124
North Africa and the Middle East	25
North West Europe	101
North-East Asia	3
Oceania	1
South East Asia	17
Southern and Central Asia	32
Southern and Eastern Europe	32
Sub Saharan Africa	5
Travel to more than one region	5
<b>Total</b>	<b>393</b>

## Other notifiable infectious diseases

### Creutzfeldt-Jakob disease

Seven cases of Creutzfeldt-Jakob disease (CJD) were notified in 2020, in SA, higher than the four cases notified in 2019 and higher than the five-year average of four cases per year from 2015 to 2019. Cases of CJD comprised of five females and two males with a median age of 69 years. There were no links or common exposures identified between cases and all were classified as sporadic cases of classical CJD.

### Legionellosis

Fifty-eight cases of legionellosis were notified in 2020, in SA, higher than the 45 cases reported in 2019 and higher than the five-year average of 34 notifications per annum for the period 2015 to 2019 (Figure 16).

Laboratory tests attributed 11 cases to *Legionella pneumophila* serogroup 1, 46 cases were further typed as *L. longbeachae* and one case was further typed as *L. bozemanii*.

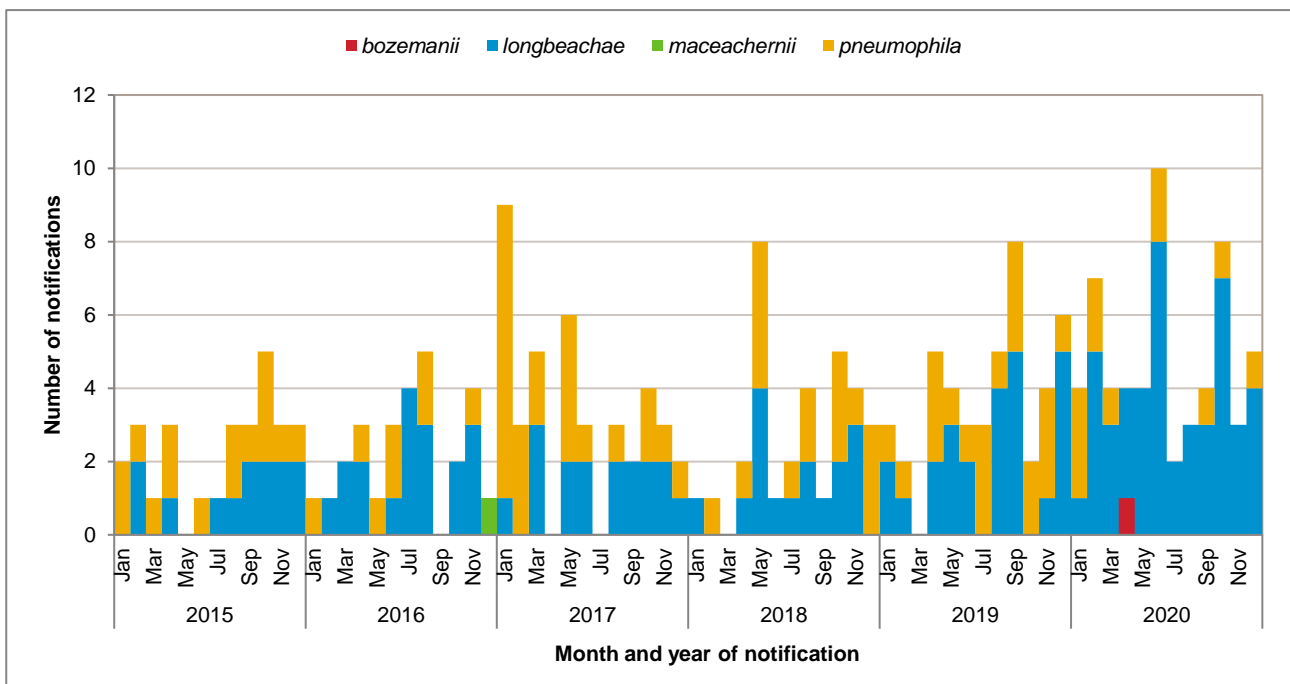
The 11 notified cases of *L. pneumophila* serogroup 1 comprised of three females and eight males with an age range of 34 to 85 years and a median age of 67 years. Cases resided in both metropolitan Adelaide and rural SA. Nine cases were hospitalised, and no cases were reported to have died from the infection.

All cases of *L. pneumophila* are referred to Health Protection Programs, SA Health for environmental investigation. No links or common sources were identified.

The 46 notified cases of *L. longbeachae* comprised of 18 females and 28 males with an age range of 40 to 100 years and a median age of 76 years. Cases resided across metropolitan Adelaide and rural SA. Thirty-eight cases reported hospitalisation and no deaths were reported.

One case of *L. bozemanii* was notified in a male in his 50s from metropolitan Adelaide. He was hospitalised but passed away. His death was not attributed to the infection.

**Figure 16 Notified cases of legionellosis by serogroup, and month and year of notification, South Australia, 2015-2020**



### Leprosy

There were no cases of leprosy notified in SA in 2020, to the same as in 2019 and similar to the five-year average of less than one case per year from 2015 to 2019.

## Vaccine preventable diseases

### Polio

There were no cases of polio reported in SA in 2020.

### Diphtheria

There was one case of cutaneous diphtheria infection notified in 2020, in SA, compared to no cases of cutaneous diphtheria notified in 2019, and the five-year average of less than one notification per year for the period of 2015 to 2019. The last reported case of cutaneous diphtheria was reported in 2018.

The case was a 33-year-old female who acquired their infection in Papua New Guinea. The case reported that they had been previously vaccinated. In accordance with the national guidelines, contact tracing of all close contacts occurred, they were tested, advised to isolate and received vaccination (if necessary).

No cases of respiratory diphtheria have been reported in South Australia since the national case definition was adopted in 2013.

### Haemophilus influenzae infection (invasive)

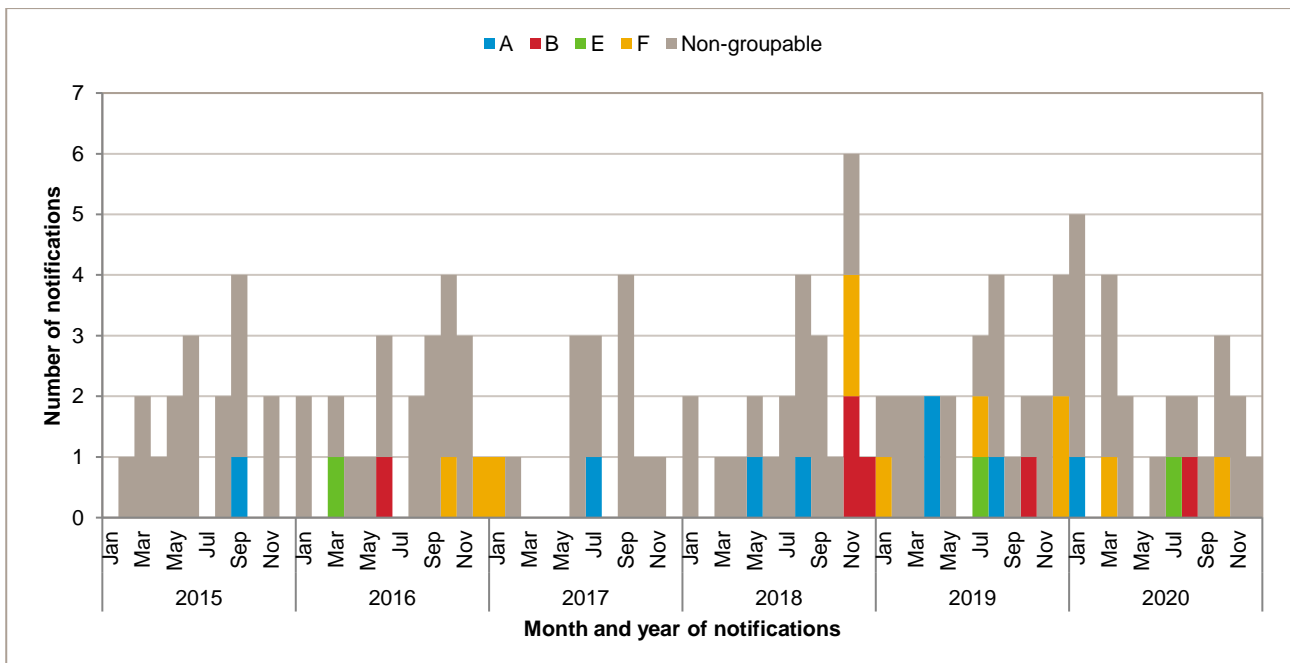
In 2020, there were 23 cases of invasive *H. influenzae* infection notified, similar to the 26 cases reported in 2019 and the five-year average of 21 cases reported per annum for the period 2015 to 2019 (Figure 17).

In 2020, *H. influenzae* infection notifications comprised of 16 females and seven males with an age range of less than one to 102 years and a median age of 54 years. There were no reported deaths due to *H. influenzae* infection. Three cases identified as Aboriginal or Torres Strait Islander peoples in 2020, similar to the four cases in 2019.

Further laboratory tests attributed the cases to the following groups: one case to type A, one case to type B (HiB), one case to type E, two cases to type F and the remainder were non-groupable. One case of HiB in 2020 is the same as the one case reported in 2019 and the five-year average of one case per annum for the period of 2015 to 2019.

The case of HiB in 2020 was a five-year old male from regional South Australia. The case was vaccinated against HiB. In accordance with the national guidelines, contact tracing of all close contacts occurred and clearance antibiotics were given, where appropriate.

**Figure 17 Notified cases of invasive *Haemophilus influenzae* infection by type, and month and year of notification, South Australia, 2015-2020**

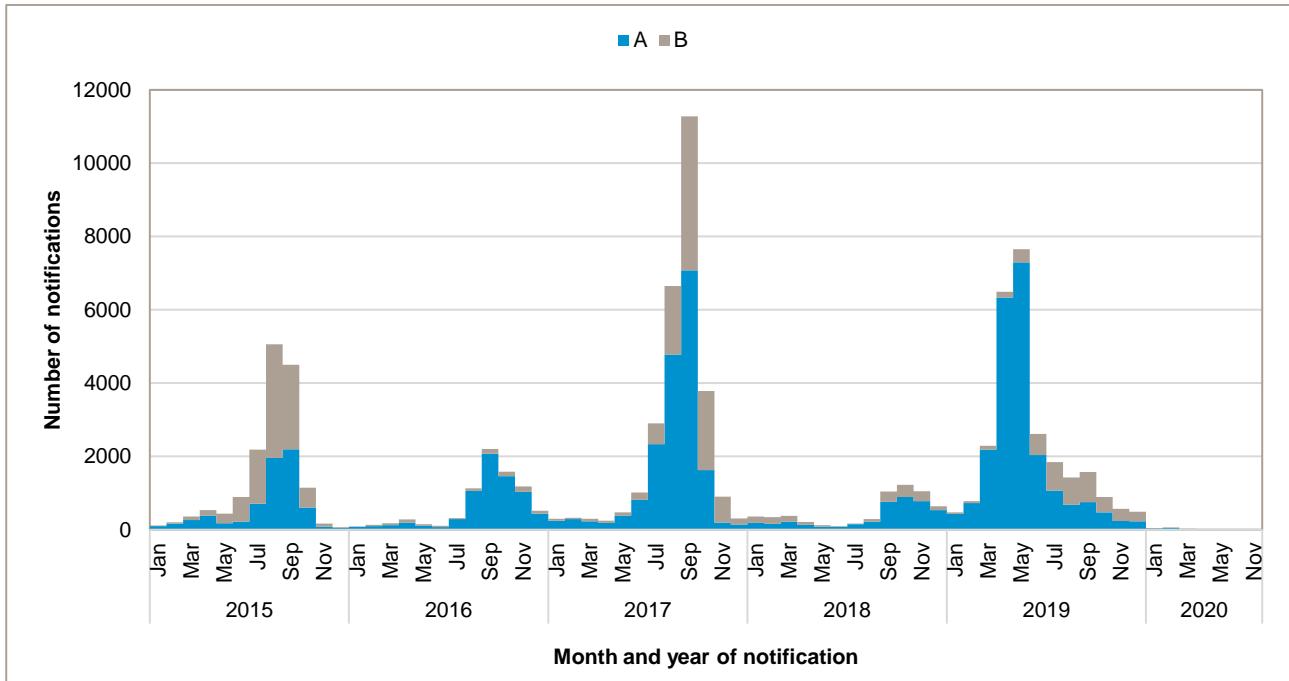




## Influenza

There were 1,583 notifications of laboratory confirmed influenza in 2020, significantly lower than the previous year with 27,096 notifications in 2019 and significantly lower than the five-year average of 17,005 notifications per annum for 2015 to 2019 (Figure 18).

**Figure 18 Notified cases of influenza virus by type, and month and year of notification, South Australia, 2015-2020**



In 2020, notifications of influenza were in 800 females and 783 males. Cases ranged in age from less than one to 97 years with a median age of 38 years.

The highest number of influenza notifications occurred in children aged less than 10 years of age and accounted for 19% of notifications. By comparison, in 2019, 25% of notifications were in children aged less than 10 years with notification rates highest in this age group. In 2020, persons aged 85 or older accounted for two percent of all notifications, lower than the five percent in 2019 (Figure 19).

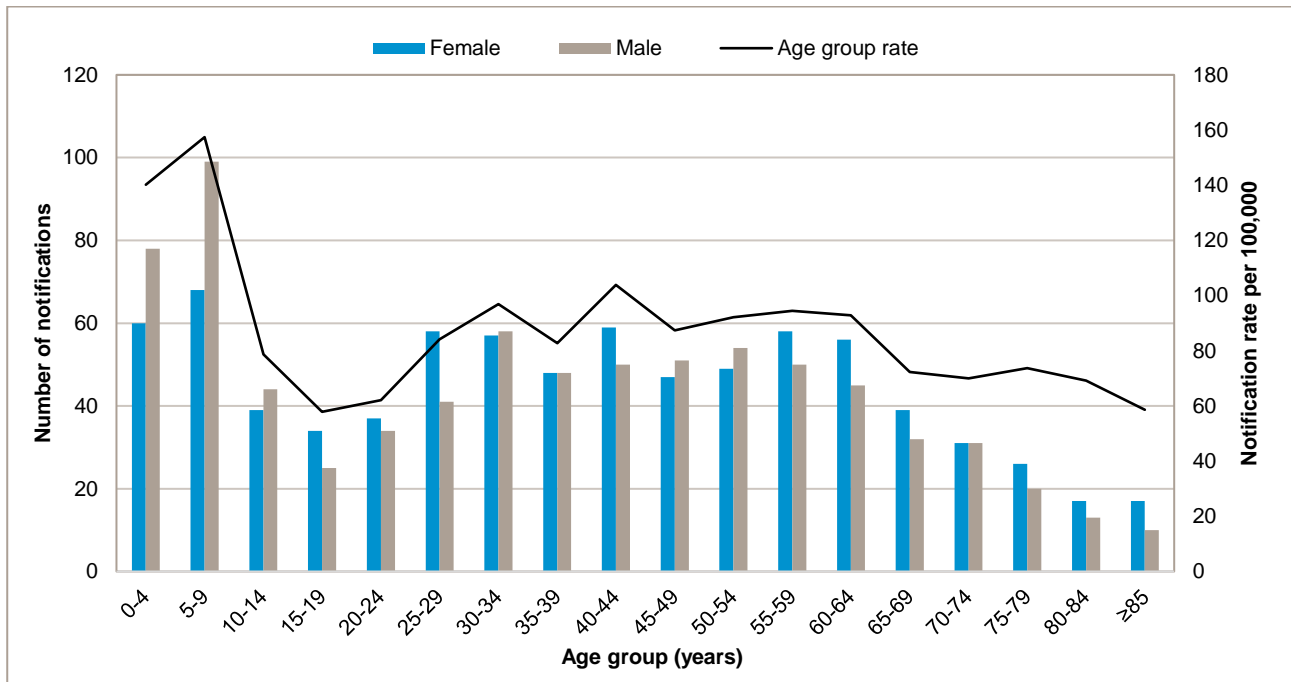
Among influenza notifications in 2020, 79% (1,256) were reported as influenza virus type A and 21% (327) were reported as influenza virus type B, compared to 83% type A and 17% type B in 2019.

In 2020, there were 26 cases that reported to identify as Aboriginal or Torres Strait Islander people and this represented 2% of all influenza notifications. The completeness of indigenous status data was 75%, similar to previous years.

In 2020, there were three deaths reported due to influenza virus infection, compared to 119 deaths in 2019 and 15 deaths in 2018.

In 2020 there was one outbreak of influenza reported to CDCB in a residential care facility. Influenza outbreaks in 2020 were markedly lower than in 2019, during which 107 outbreaks were reported, 102 of these were in residential care facilities and five in other high-risk settings ([Appendix 3](#)).

Figure 19 Notified cases of influenza by age group and sex, and rate of notified cases of influenza by age group, South Australia, 2020



### Invasive meningococcal disease

There were five cases of invasive meningococcal disease (IMD) notified in 2020, significantly lower than the 27 cases reported in 2019 and the five-year average of 31 cases reported per annum for the period 2015 to 2019 (Figure 20).

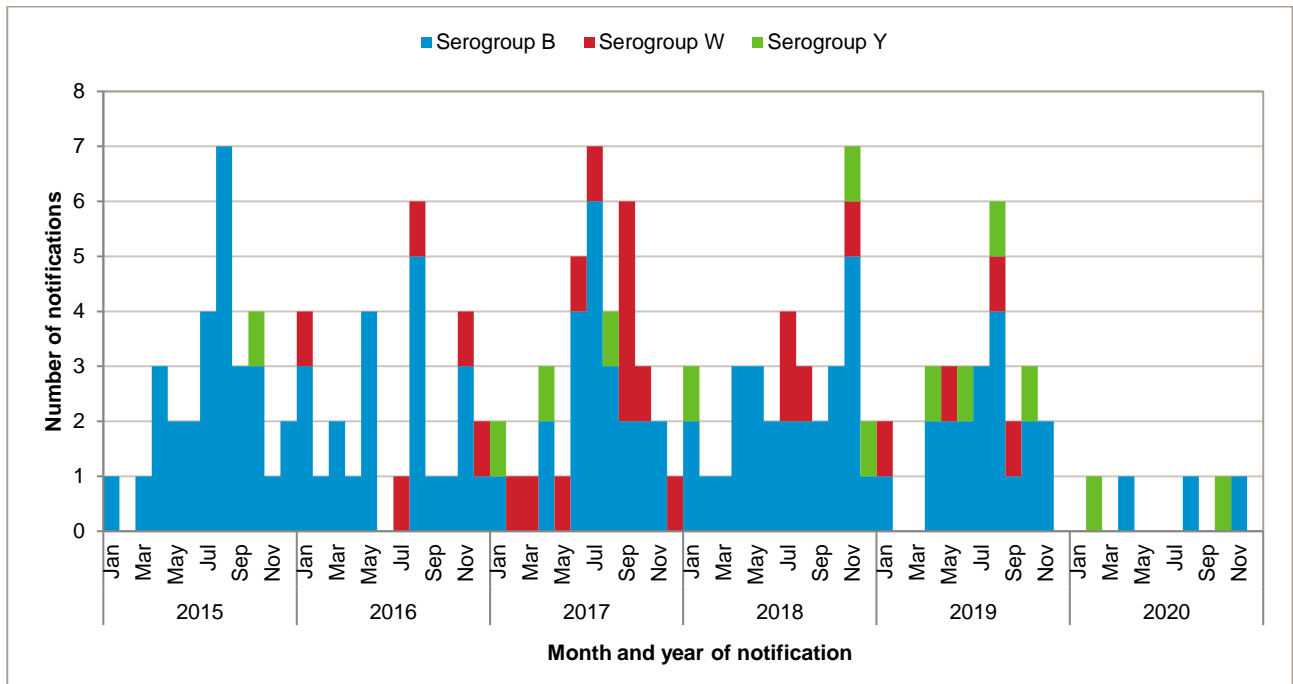
In 2020, IMD notifications were in three females and two males with an age range of less than one to 45 years. The median age of cases in 2020 was 16 years, lower than the five-year median age of 26 years for 2015 to 2019. The highest number of notifications occurred in females in the age group less than one to four years. Notification rates were also highest in the less than one to four-year age group (Figure 21).

All cases in 2020 resided in metropolitan Adelaide. Two cases identified as Aboriginal or Torres Strait Islander peoples.

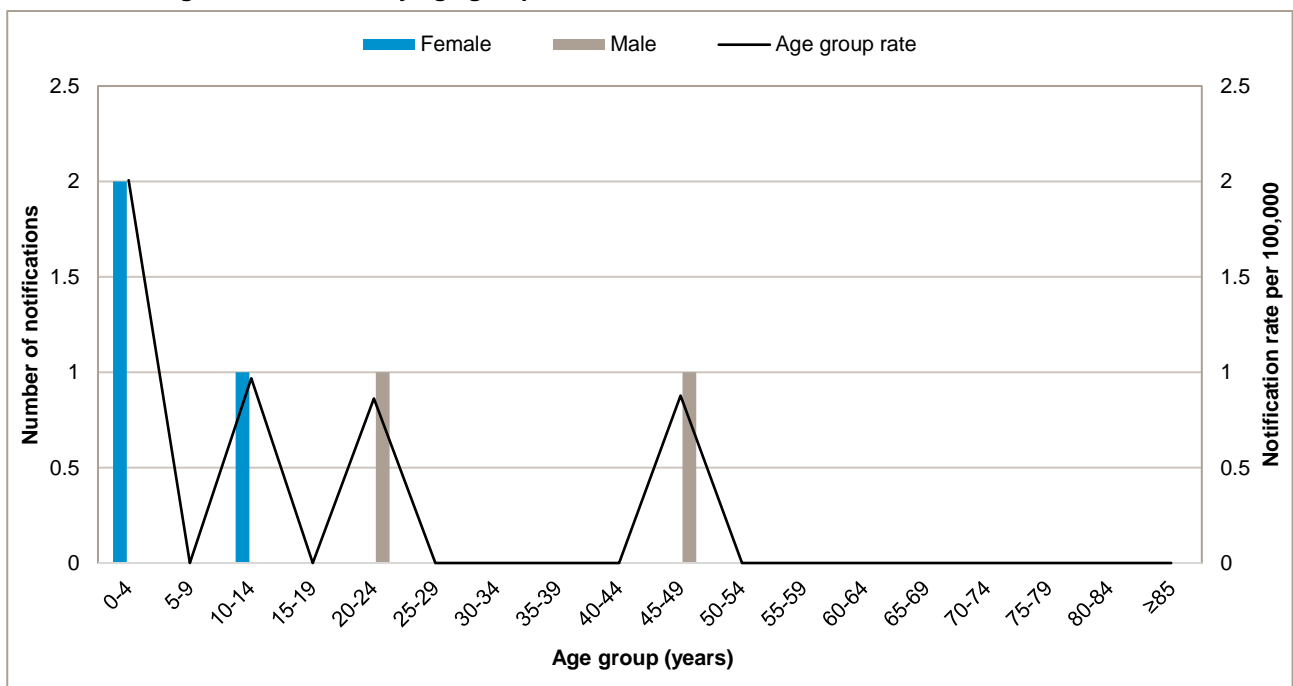
Further laboratory testing attributed three cases to serogroup B and two cases to serogroup Y. All cases were hospitalised in 2020. One case died due to the disease (serogroup B).

In accordance with national guidelines, contact tracing occurred for all cases; clearance antibiotics were provided for close contacts as well as vaccination, where appropriate.

**Figure 20 Notified cases of invasive meningococcal disease by serotype, and month and year of notification, South Australia, 2014-2019**



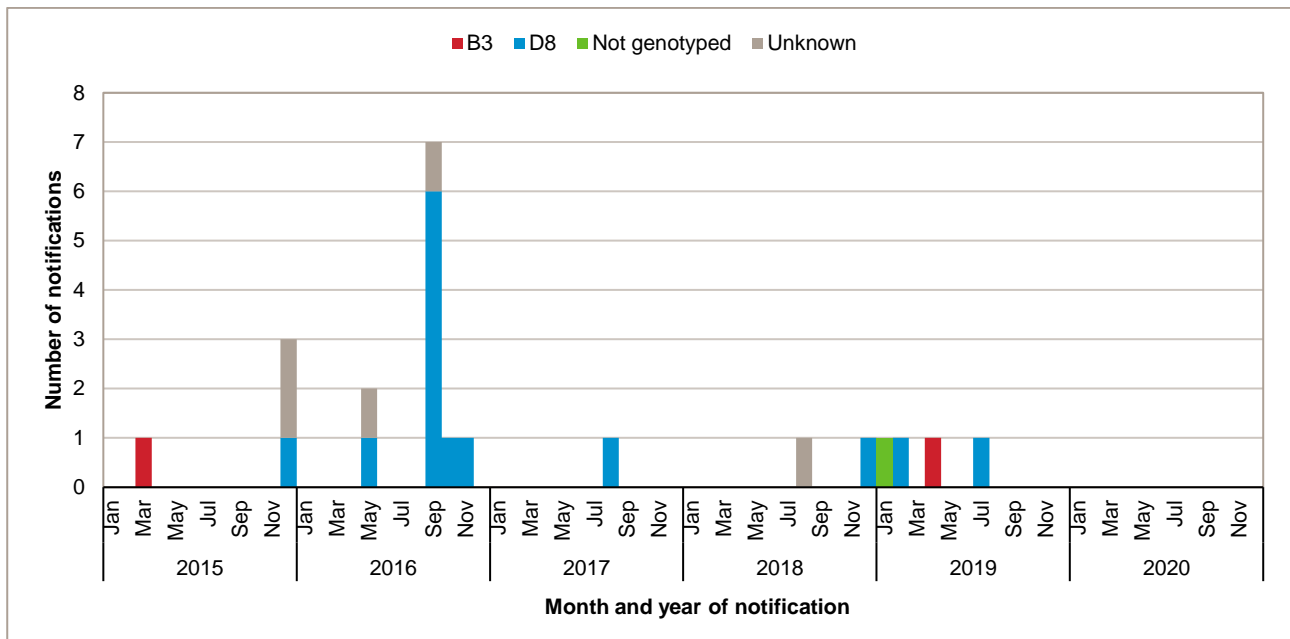
**Figure 21 Notified cases of invasive meningococcal disease by age group and sex, and rate of notified cases of invasive meningococcal disease by age group, South Australia, 2020**



**Measles**

There were no notified cases of measles in 2020, less than the four cases notified in 2019 and lower than the five-year average of four cases notified per annum for the period of 2015 to 2019 (Figure 22).

Figure 22 Notified cases of measles by genotype, and month and year of notification, South Australia, 2015-2020



### Mumps

Thirteen cases of mumps were notified in 2020, higher than eight cases reported in 2019 and three times lower than the five-year average of 28 cases reported per annum for the period of 2015 to 2019 (Figure 23). In 2017, an outbreak of mumps occurred in the Anangu Pitjantjatjara Yankunytjatjara (APY) Lands which largely accounted for the increase in cases seen.

In 2020, mumps notifications were in four females and nine males with an age range of one to 85 years and a median age of 43 years.

In 2020, two cases had documented evidence of receiving two mumps containing vaccine, and two cases had received one mumps containing vaccine.

PCR testing to diagnose mumps in SA was introduced in 2015. PCR testing increases the accuracy of diagnoses and is a less invasive test. In 2020 no cases were diagnosed by PCR compared to one case in 2019, two cases in 2018, and 49 cases in 2017. The proportion of diagnosis confirmation by PCR testing is expected to increase (Figure 24).

Figure 23 Notified cases of mumps by month and year of notification, South Australia, 2015-2020

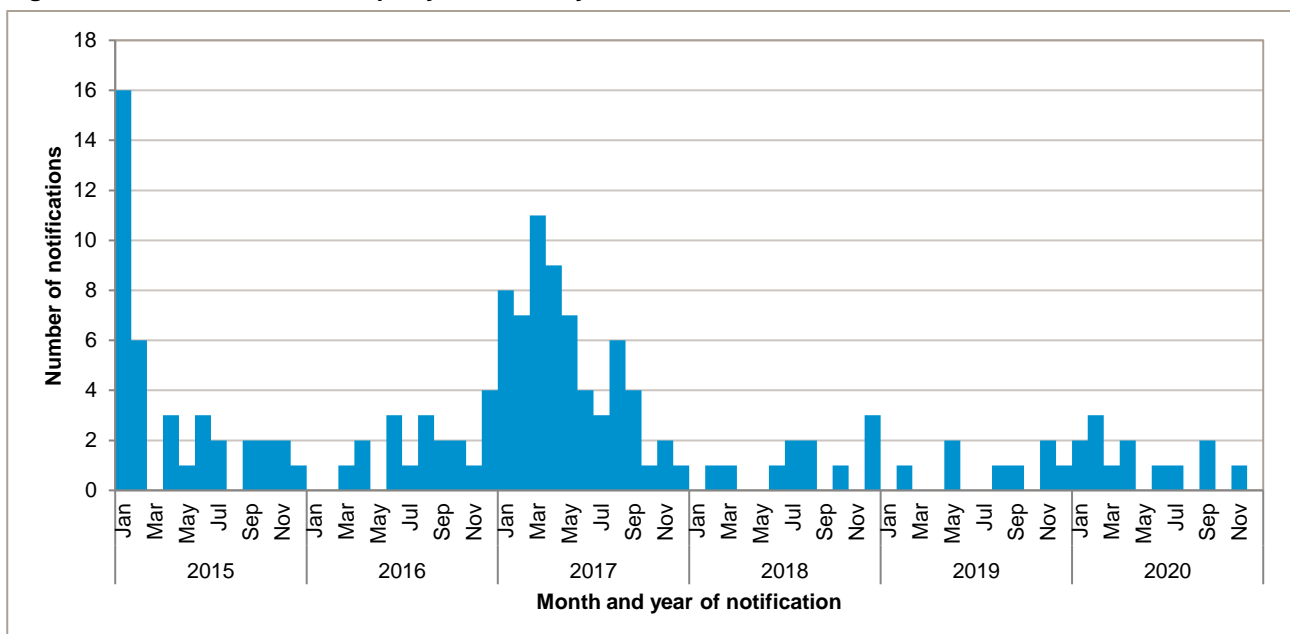
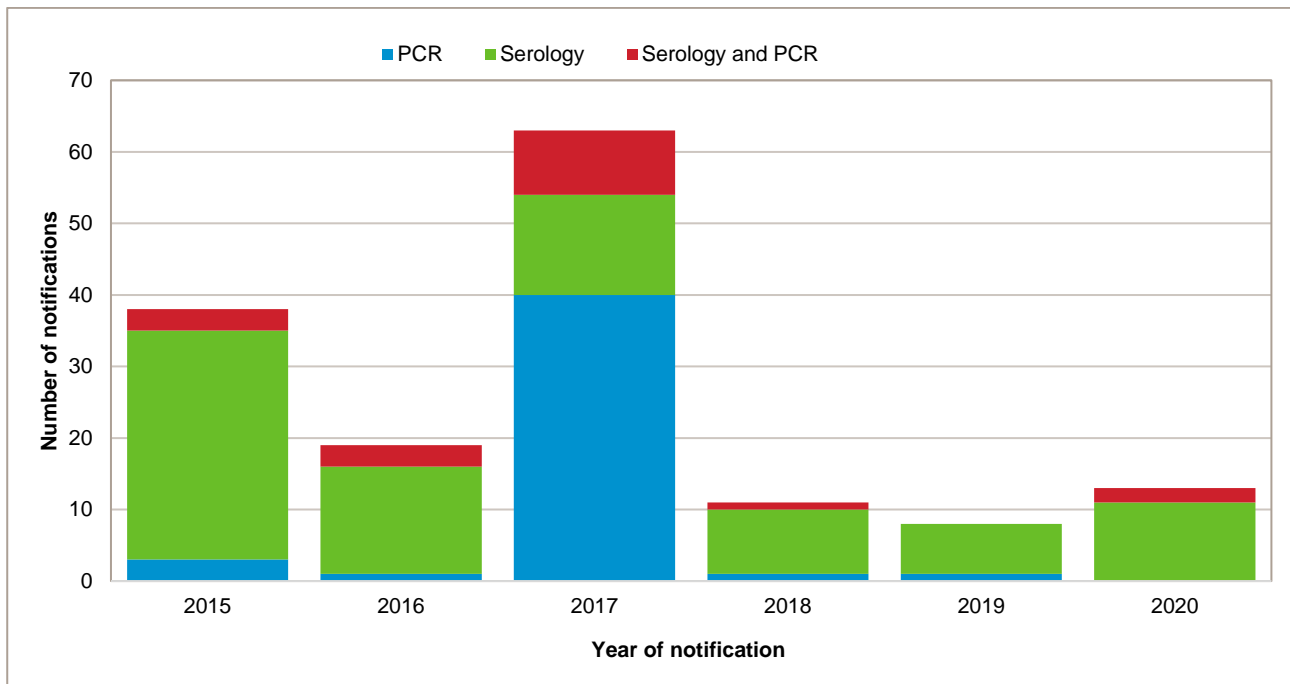


Figure 24 Notified cases of mumps by laboratory testing method and year, South Australia, 2015-2020



### Pertussis (whooping cough)

In 2020, 290 cases of pertussis were notified, lower than the 309 cases reported in 2019 and lower than the five-year average of 1,210 cases reported per annum for the period 2015 to 2019 (Figure 25).

In 2020, notifications of pertussis comprised of 155 females and 135 males. Higher numbers of notifications in females have also been seen in previous years. The age range of notifications in 2020 was less than one year to 97 years. The median age for 2020 was 34 years, similar to the median age of 35 years in 2019 and higher than the five-year median age of 27 years for 2015 to 2019. The pertussis notifications and notification rates were highest in children aged 10 to 14 years (Figure 26). Pertussis vaccination is recommended for pregnant women. Three cases were aged less than six months.

Figure 25 Notified cases of pertussis by month and year of notification, South Australia, 2015-2020

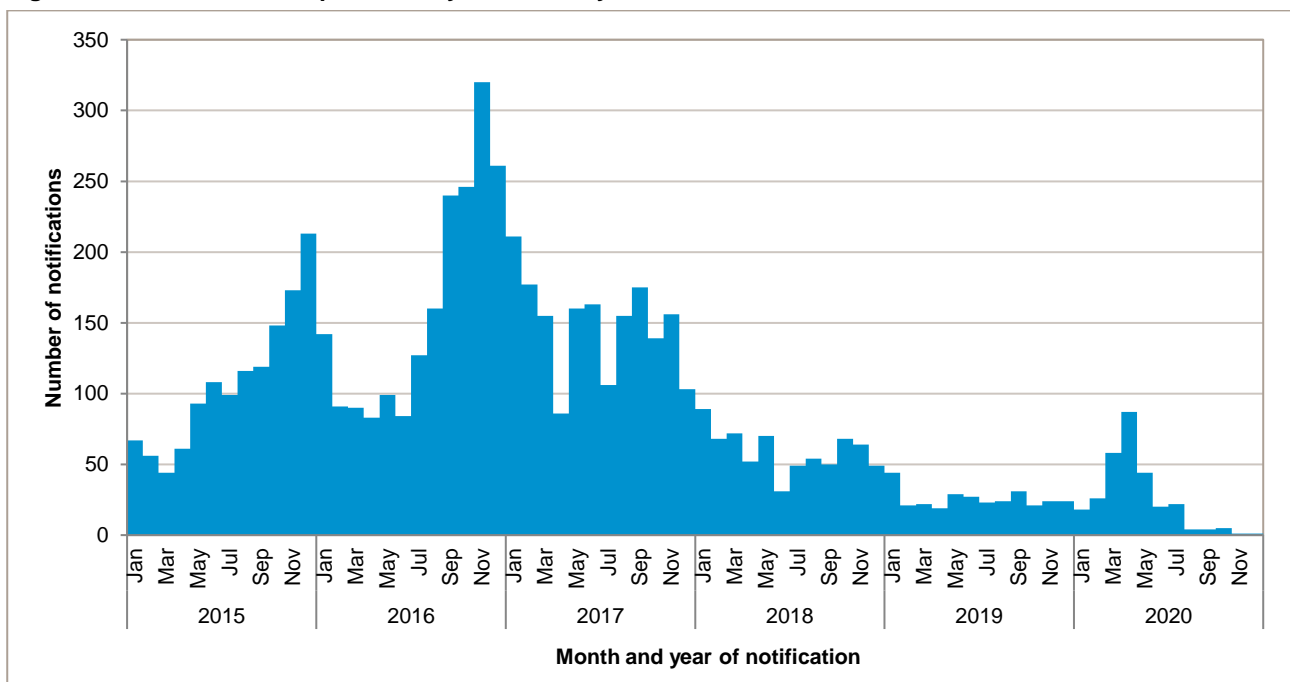
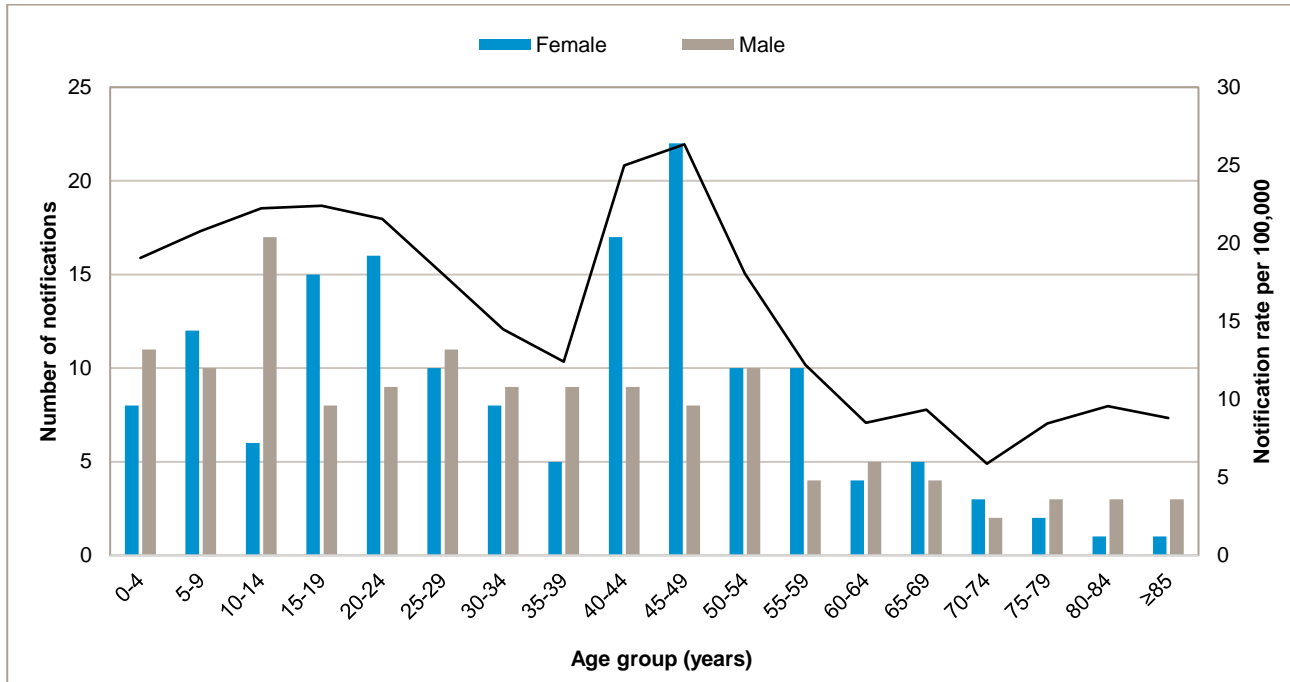


Figure 26 Notified cases of pertussis by age group and sex, and rate of notified cases of pertussis by age group, South Australia, 2020

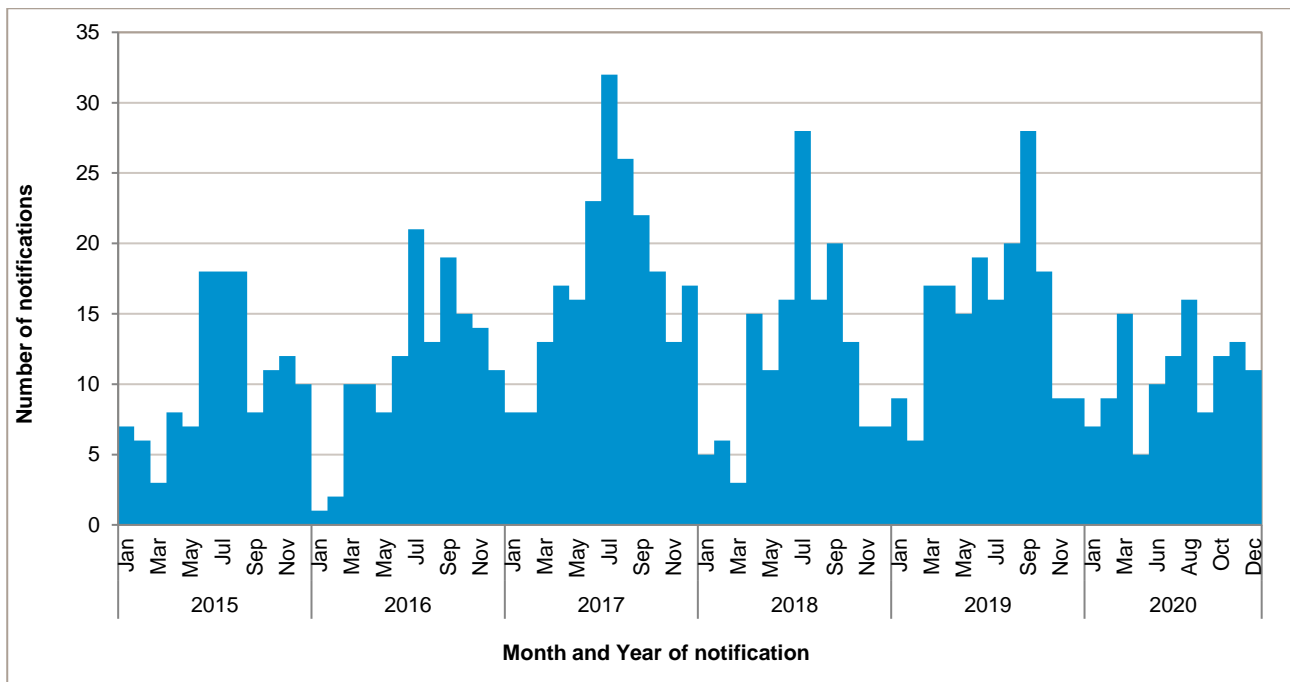


### Invasive pneumococcal disease

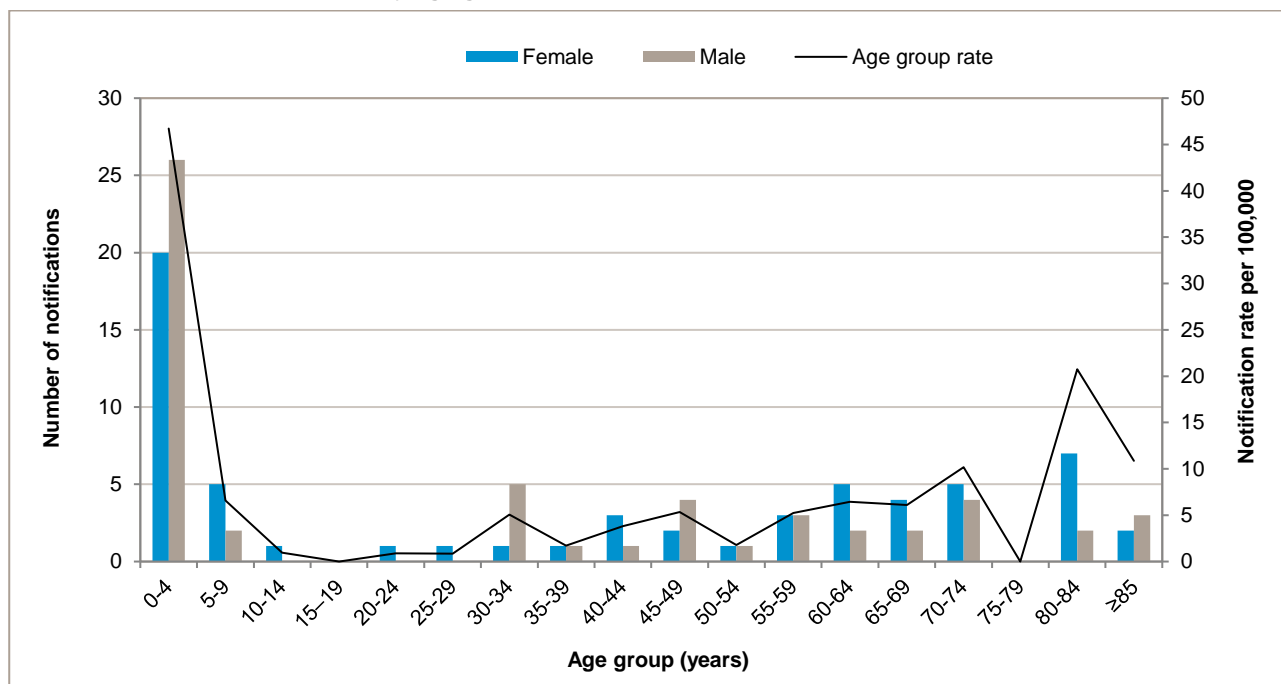
There were 118 notifications of invasive pneumococcal disease notified in 2020, lower than the 183 notifications in 2019, and lower than the five-year average of 161 notifications per annum for the period 2015 to 2019 (Figure 27).

Cases comprised of 62 females and 56 males with an age range of less than one year to 93 years and a median age of 30 years. The median age in 2020 was lower than the five-year median age for the period 2015 to 2019. Notifications were highest in the less than one to four-year age group, as were notification rates. It was the second time, over the 2015 to 2020 period, that there were more females notified than males with a female to male ratio of 1:0.9 in 2020, compared to an average of 1:1.3 for the five-year period of 2015 to 2019 (Figure 28).

Figure 27 Notifications of invasive pneumococcal disease by month and year, South Australia, 2015-2020



**Figure 28 Notified cases of invasive pneumococcal disease by age group and sex, and rate of notified cases of invasive pneumococcal disease by age group, South Australia, 2020**



In 2020, 23 people with invasive pneumococcal disease reported to identify as Aboriginal or Torres Strait Islander peoples.

One death (1%) was attributed to invasive pneumococcal disease in 2020, compared to nine deaths (5%) in 2019.

Further laboratory testing identified the pneumococcal serotype for 70 (59%) cases. Of the 48 cases not serotyped, 47 were diagnosed by PCR only and one was not referred for typing. In 2020, both serogroup 3 and serogroup 19F were the most common serotypes identified and each accounted for 6% of all notifications or 10% of isolates serotyped (Table 4).

**Table 4 Most commonly identified serotypes of invasive pneumococcal disease, South Australia, 2020**

Pneumococcal serotype	Notifications (%)
Not serotyped	48 (41)
Serotype 3	7 (6)
Serotype 19F	7 (6)
Serotype 22F	6 (5)
Serotype 4	6 (5)
Serotype 11A	5 (4)
Serotype 7F	5 (4)
Other serotypes	34 (29)
<b>Total</b>	<b>118</b>

In 2020, fifty-five cases (47%) were attributed to serotypes included in vaccines available on the National Immunisation Program. This is lower than 2019, when 50% of cases were attributed to serotypes included in vaccines available on the National Immunisation Program.

In 2020, there were 46 cases in persons aged less than five years. Of these, 36 were reported as appropriately vaccinated for age, four were partially vaccinated, four were too young for vaccination and two were unvaccinated.

Of the 29 cases aged 65 years and over, two people were reported to identify as Aboriginal or Torres Strait Islander people and neither had been vaccinated in the last five years. Of the remaining 27 cases, eight

cases had received at least one vaccination against pneumococcal disease, 17 cases were not vaccinated against pneumococcal disease or vaccinated over five years before the diagnostic test, and the vaccination status was unknown for two cases.

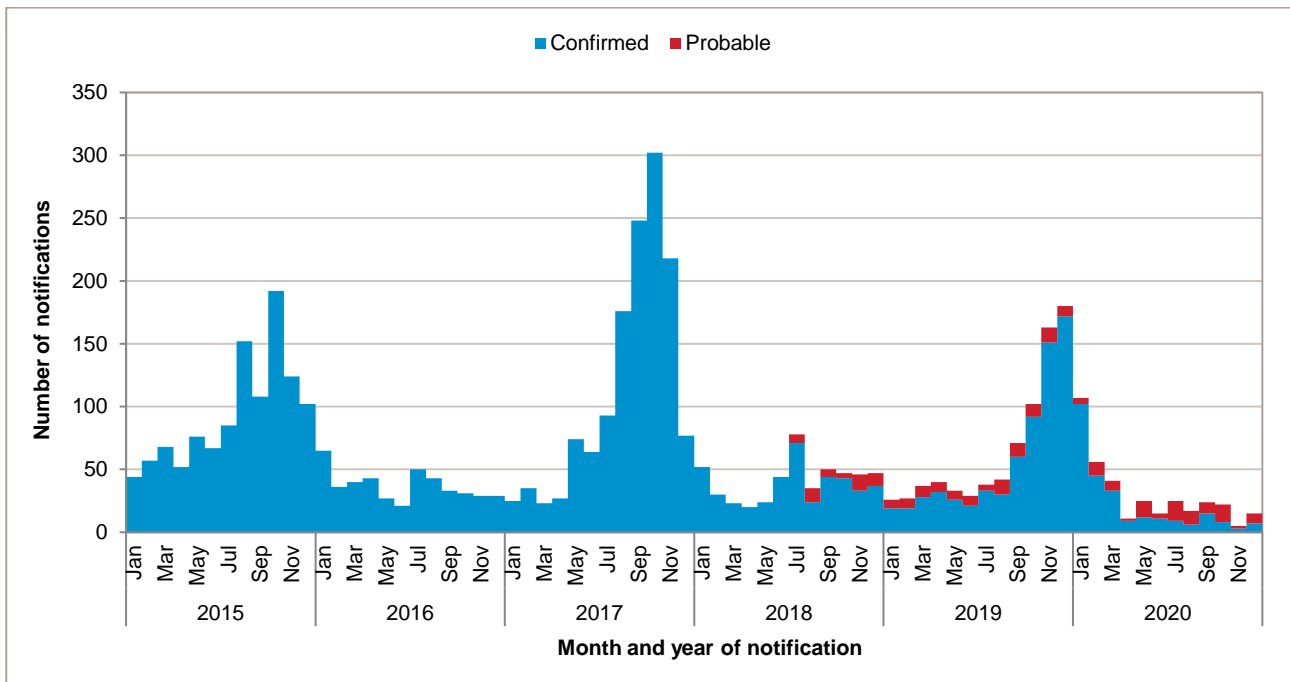
In 2020, five cases were recorded as vaccine failures as they tested positive for pneumococcal serotypes for which they were vaccinated. In 2019, 13 vaccine failures were reported.

Enhanced data for invasive pneumococcal disease notifications is collected and reported nationally elsewhere and informs vaccine development and programming.

### Rotavirus infection

There were 363 cases of rotavirus infection notified in 2020, lower than the 788 notifications received in 2019 and lower than the five-year average of 844 notifications per annum for the period 2015 to 2019 (Figure 29).

**Figure 29 Notified cases of rotavirus infection by confirmation status and, month and year of notification, South Australia, 2015-2020**



In July 2018, the case definition for rotavirus changed to assist with differentiating cases of laboratory positive rotavirus that may be due to recent rotavirus vaccination (if the laboratory test cannot differentiate wild-type and vaccine derived rotavirus). If a case is less than eight months of age and had been vaccinated against rotavirus less than four weeks prior to being tested, the case is now classified as probable. Twenty eight percent of total cases in 2020 were classified as probable (Figure 29).

Notified cases of rotavirus comprised of 171 females and 192 males with an age range of less than one year to 94 years with 205 (56%) cases aged less than two years. Of the cases aged less than two years, 211 (90%) cases were vaccinated for age against rotavirus.

There were two outbreaks of rotavirus reported to CDCB in 2020. One report was from an aged care facility and the second report was from a childcare centre ([Appendix 3](#)).

### Rubella

There was one case of rubella notified in SA in 2020, compared to no notifications in 2019 and the five-year average of less than one case per year from 2015 to 2019. The case was a 36 year old male who acquired his infection in the Philippines. The case was not vaccinated.

No cases of congenital rubella have been reported since 2013.



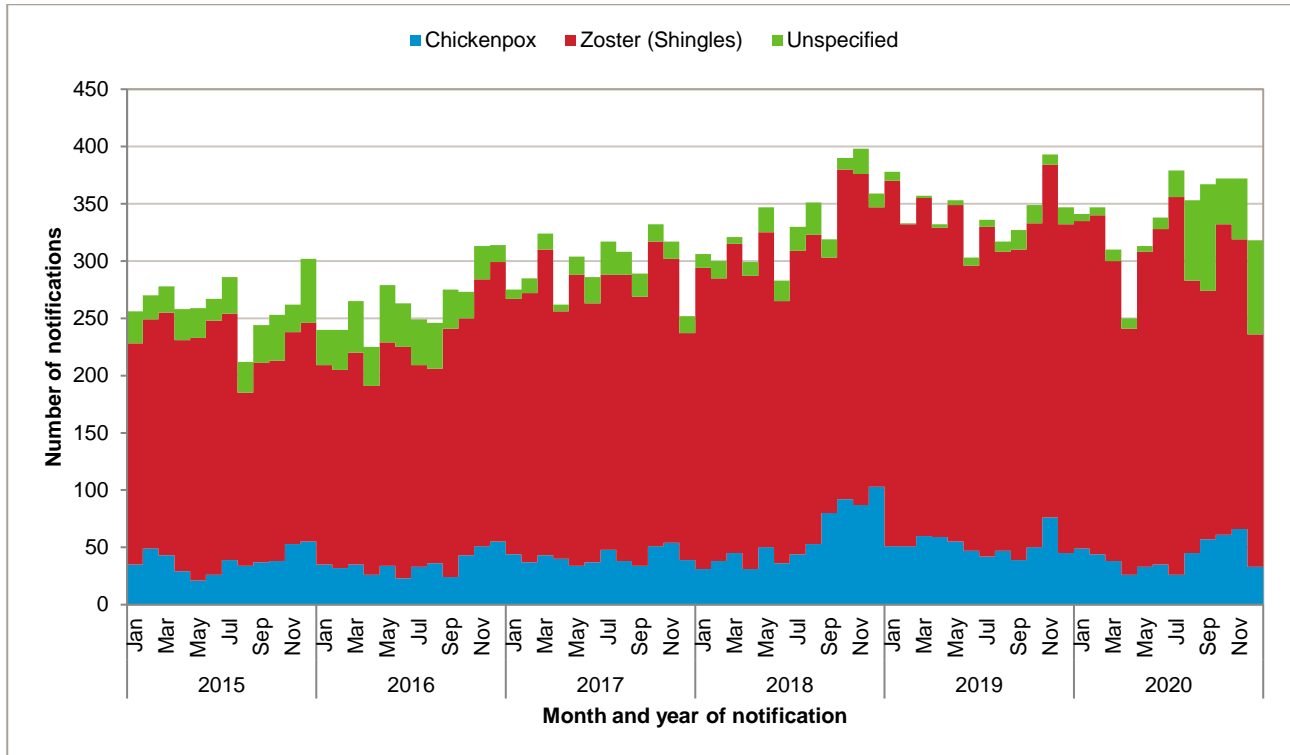
## Tetanus

There were no cases of tetanus notified in SA in 2020, compared to one notification in 2019 and the five-year average of less than one case per year from 2015 to 2019.

## Varicella zoster virus

In 2020, there were 4,060 cases of varicella zoster virus infection notified, lower than the 4,125 cases notified in 2019 and the five-year average of 3,602 notifications per annum for the period of 2015 to 2019 (Figure 30).

**Figure 30 Notified cases of varicella zoster virus infection by infection type, and month and year of notification, South Australia, 2015-2020**



Among cases of varicella zoster notified there were 2,212 females and 1,848 males with an age range of less than one to 101 years and a median age of 54 years. Medical notifications characterised 513 infections as chickenpox (13%) and 3,139 as shingles (77%) and the clinical manifestation for 408 cases (10%) remained unspecified. The median age of chickenpox cases was 10 years, and the median age of shingles cases was 58 years.

In November 2016, a National Shingles Vaccination Program was commenced as an ongoing program for persons aged 70 years, with a five-year catch-up program for persons aged 71 to 79 years. Previously shingles vaccine was only available on the private market.

There were five outbreaks of varicella zoster reported to CDCB in 2020. All reports were from preschool and primary school settings ([Appendix 3](#)).

## Vector borne diseases

No cases of West Nile virus (Kunjin variant) or Murray Valley encephalitis were reported in 2020.

### Barmah Forest virus infection

In 2020, five cases of Barmah Forest virus infection were notified in SA, similar to the five cases notified in 2019 and higher than the five-year average of four cases per annum for the period 2015 to 2019. From December 2013 to November 2016, changes in laboratory testing procedures affected the number of notifications compared with previous years. Cases comprised of two males and three females with an age range of 31 to 67 years and a median age of 41 years. One case resided in metropolitan Adelaide and the remaining four cases lived in regional South Australia.

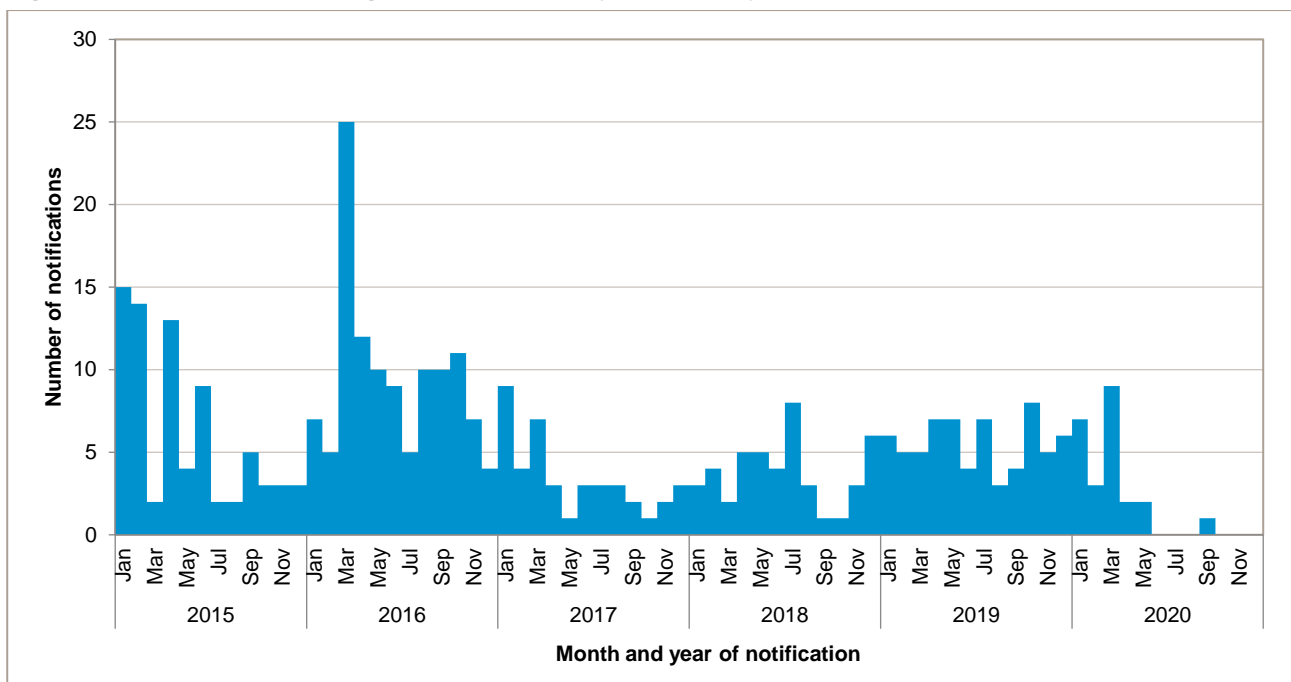
### Chikungunya virus infection

In 2020, six cases of chikungunya virus infection were notified in SA, higher than the three cases notified in 2019 and higher than the five-year average of three cases per annum for the period 2015 to 2019. The cases were reported in two females and four males with an age range of less than one year to 61 years and a median age of 31 years. All six cases reported overseas travel (Africa, Indonesia, Samoa, Papua New Guinea) prior to illness onset.

### Dengue virus infection

There were 24 cases of dengue virus infection notified in 2020, lower than the 67 cases in 2019, and lower than the five-year average of 69 notifications per annum for the period 2015 to 2019 (Figure 31).

**Figure 31 Notified cases of Dengue virus infection by month and year of notification, South Australia, 2015-2020**



In 2020, notifications of dengue virus infection were in eight females and 16 males with an age range of 15 to 76 years and a median age of 39 years.

All cases were acquired overseas. South-east Asia was the most commonly reported region of exposure (79%), followed by southern central Asia (8%) (Table 5).

**Table 5 Notified cases of dengue virus infection by country of acquisition, South Australia, 2020**

Country of acquisition	Cases
East Timor	1
India	1
Indonesia	10
Malaysia	1
Mali	1
Nepal	1
Papua New Guinea	1
Philippines	2
Thailand	5
Vietnam	1
<b>Total</b>	<b>24</b>

### Japanese encephalitis

There was one case of Japanese encephalitis infection notified in SA in 2020, higher than the no notifications in 2019 and the five-year average of no cases per year from 2015 to 2019. The case was a male in his 30s who acquired the infection in Thailand.

### Malaria

Ten cases of malaria were notified in 2020, a substantial decrease compared to the 42 cases reported in 2019 and the five-year average of 19 cases reported per annum for the period 2015 to 2019. In 2020, malaria infections were in eight males and two females with an age range of 16 to 37 years and a median age of 28 years.

All cases were acquired overseas. Five cases (50%) were acquired in Africa, three (30%) in Asia and two (20%) in the Western Pacific (Table 6).

Five cases were caused by *Plasmodium falciparum* of which three were acquired in Africa, one in Asia and one in the Western Pacific. Four cases were caused by *P. vivax* of which two were acquired in Asia, one in Africa and one in the Western Pacific. One case was not further typed, this case was acquired in Africa.

**Table 6 Notified cases of malaria infection by region and country of acquisition, South Australia, 2020**

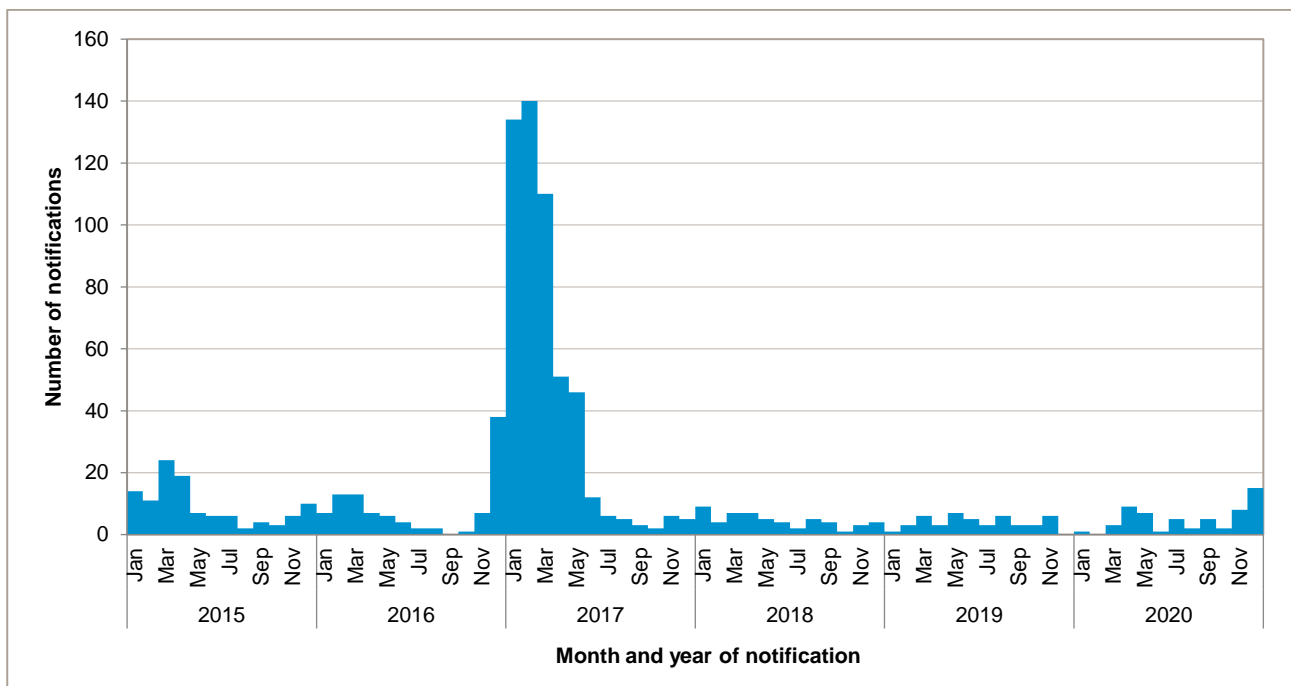
Region and country of acquisition	Not further typed	<i>P. falciparum</i>	<i>P. vivax</i>	Total
<b>Africa</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>5</b>
Cameroon	0	1	0	1
Liberia	0	1	0	1
Nigeria	1	0	0	1
Sudan	0	0	1	1
Sub-Saharan Africa (not further specified)	0	1	0	1
<b>Asia</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>
India	0	0	1	1
Indonesia	0	0	1	1
Pakistan	0	1	0	1
<b>Western Pacific</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>2</b>
Papua New Guinea	0	1	1	2
<b>Total</b>	<b>1</b>	<b>5</b>	<b>4</b>	<b>10</b>

### Ross River virus

There were 58 cases of Ross River virus infection (RRv) notified in 2020, higher than the 46 cases reported in 2019 and lower than the five-year average of 166 cases notifications per annum for the period 2015 to 2019 (Figure 32).

In 2020, notifications of RRv infection were reported in 30 females and 28 males with an age range of 17 to 80 years and a median age of 54 years. Medical notification may elicit the suspected location of exposure and in 2020 medical notifications were received for 74% of cases. Exposure during interstate travel was reported for three cases (5%). Notifications for 15 (26%) cases either reported travel to, or were residents of, locations along the Murray River.

**Figure 32 Notified cases of Ross River virus infection by month and year of notification, South Australia, 2015-2020**



### Zika virus infection

There were no cases of Zika virus infection notified in SA in 2020, similar to no notifications in 2019 and the five-year average of less than one case per year from 2015 to 2019.

## Zoonoses

No cases of anthrax, brucellosis, lyssavirus, Hendra virus infection, rabies or tularaemia were reported in 2020.

### Brucellosis

There were no cases of brucellosis notified in SA in 2020, similar to no notifications in 2020, and lower than the five-year average of less than one case per year from 2015 to 2019.

### Leptospirosis

There were two cases of leptospirosis notified in SA in 2020, similar to the two notifications in 2019, and higher than the five-year average one case per year from 2015 to 2019. In 2020, notifications of leptospirosis were in a 35 year old male who acquired his infection in Bali, Indonesia and a 48 year old male from regional SA.

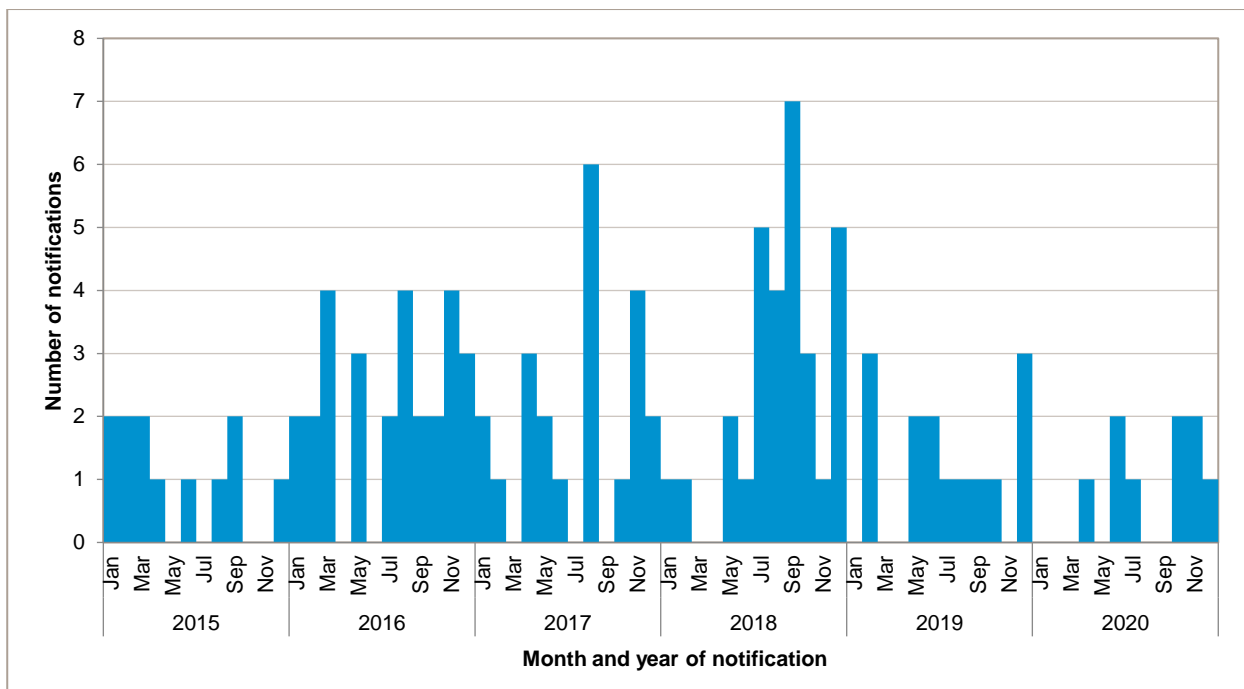
### Psittacosis (ornithosis)

There was one case of psittacosis (ornithosis) notified in SA in 2020, similar to one notification in 2019, and the five-year average of less than one case per year from 2015 to 2019. In 2020, the notification of psittacosis was in a 34 year old female from metropolitan Adelaide.

### Q fever

There were nine cases of Q fever notified in 2020, lower than the 14 cases notified in 2019 and lower than the five-year average of 21 cases per annum for the period 2015 to 2019 (Figure 33). Cases comprised of one female and eight males with an age range of 30 to 67 years and a median age of 46 years. Five cases were hospitalised.

**Figure 33 Notified cases of Q fever by month and year of notification, South Australia, 2015-2020**



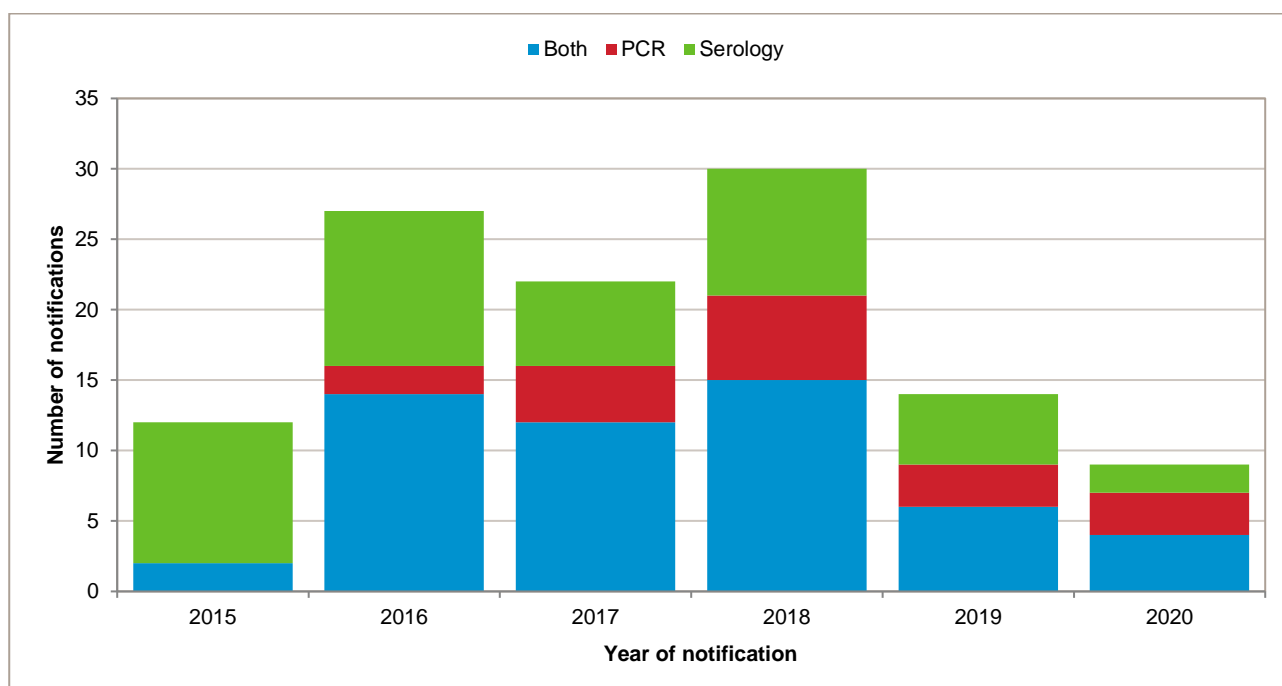
The most common risk factor reported was residing or working on a farm (Table 7). None of the notified cases were reported to be vaccinated.

**Table 7 Notified cases of Q fever by risk factor, South Australia, 2020**

Risk factor	Cases (%)
Residing/working on farm	3 (33)
Non-farm animal exposure	2 (22)
Working at an abattoir	1 (11)
Unknown	1 (11)
No risk factor identified	2 (22)
<b>Total</b>	<b>9</b>

There has been an increase in the use of PCR testing for Q fever. Of the nine cases notified, four cases were diagnosed by PCR and serological testing (44%), two were diagnosed by serological testing only (22%) and three were diagnosed by PCR testing only (33%). The introduction of PCR testing is likely to be responsible for part of the increase in Q fever notifications since 2016 (Figure 34).

**Figure 34 Notified cases of Q fever by laboratory testing method and year of notification, South Australia, 2015-2020**



## Appendices

## Appendix 1: Notifiable conditions by count, South Australia, 2015 to 2020\*

Notifiable condition	2015	2016	2017	2018	2019	5-year average	2020
<b>Enteric Diseases</b>							
Botulism	0	0	1	0	1	0.4	0
<i>Campylobacter</i> infection	1,818	3,198	3,113	3,094	3,287	2902	2731
<i>Cholera</i>	1	0	0	0	0	0.2	0
Cryptosporidiosis	419	432	356	197	128	306.4	129
Hepatitis A	10	7	23	21	14	15	3
Hepatitis E	1	3	1	0	2	1.4	2
Listeriosis	4	4	5	5	2	4	1
Paratyphoid	9	4	6	7	13	7.8	1
<i>Salmonella</i> infection	1,263	1,572	1456	1,174	1,177	1328	673
Shiga toxin-producing <i>E. coli</i> infection (STEC)	45	176	318	315	294	229.6	217
Haemolytic uraemic syndrome (HUS) / thrombotic thrombocytopenic purpura (TTP) infection	0	1	2	0	0	0.6	1
<i>Shigella</i> infection	77	182	300	434	283	255.2	122
Typhoid	8	6	5	6	10	7	3
<i>Vibrio parahaemolyticus</i> infection	NN	8	5	11	8	8	0
Yersinosis	67	88	76	110	114	91	70
<b>Quarantinable diseases</b>							
Influenza (avian in humans)	0	0	0	0	0	0	0
Middle East respiratory syndrome coronavirus (MERS-CoV)	0	0	0	0	0	0	0
Coronavirus 2019 (COVID-19)	NN	NN	NN	NN	NN	0	580
Plague	0	0	0	0	0	0	0
Severe acute respiratory syndrome (SARS)	0	0	0	0	0	0	0
Smallpox	0	0	0	0	0	0	0
Viral haemorrhagic fever	0	0	0	0	0	0	0
Yellow fever	0	0	0	0	0	0	0
<b>Other infectious notifiable diseases</b>							
Creutzfeldt-Jakob disease	5	2	4	6	4	4.2	7
Legionellosis	28	27	40	32	45	34.4	58
Leprosy	0	0	1	0	0	0.2	0
<b>Vaccine preventable diseases</b>							
Diphtheria	0	0	0	1	0	0.2	1
<i>Haemophilus influenzae</i> (invasive)	17	21	14	21	26	20.6	23
<i>Haemophilus influenzae</i> type b (invasive)	0	1	0	3	1	1	1
Influenza A	6,915	7,030	18,295	4,181	22,446	11773	1256
Influenza B	8,744	821	10189	1748	4,647	5230	327
Meningococcal disease (invasive)	30	27	36	34	27	30.8	5
Measles	4	11	1	2	4	4.4	0
Mumps	38	19	63	11	8	27.8	13
Pertussis	1,297	1,943	1786	716	309	1210.2	290

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Notifiable condition	2015	2016	2017	2018	2019	5-year average	2020
Pneumococcal disease (invasive)	126	136	213	147	183	161	118
Polio virus infection	0	0	0	0	0	0	0
Rotavirus	1,127	447	1362	496	788	844	363
Rubella	2	0	0	0	0	0.4	1
Rubella - congenital	0	0	0	0	0	0	0
Tetanus	0	0	2	0	1	0.6	0
Varicella zoster (unspecified)	365	414	194	194	97	252.8	408
Varicella zoster (chickenpox)	459	427	499	690	622	539.4	513
Varicella zoster (shingles)	2,332	2,341	2,858	3,119	3,406	2811.2	3139
<b>Vectorborne diseases</b>							
Barmah Forest virus infection	1	5	3	4	5	3.6	5
Chikungunya virus infection	2	7	1	2	3	3	6
Dengue virus infection	75	115	41	45	67	68.6	24
Japanese encephalitis virus infection	0	0	0	0	0	0	1
Malaria	2	10	8	34	42	19.2	10
Murray Valley encephalitis infection	0	0	0	0	0	0	0
Ross River virus infection	112	100	520	55	46	166.6	58
West Nile virus (Kunjin variant)	0	0	0	0	0	0	0
Zika virus infection	1	2	0	0	0	0.6	0
<b>Zoonoses</b>							
Anthrax	0	0	0	0	0	0	0
Australian bat lyssavirus infection	0	0	0	0	0	0	0
Brucellosis	0	0	1	0	0	0.2	0
Hendra virus infection	NN	0	0	0	0	0	0
Leptospirosis	0	2	1	0	2	1	2
Lyssavirus (NEC)	0	0	0	0	0	0	0
Psittacosis/Ornithosis	1	0	1	0	1	0.6	1
Q Fever	12	28	22	30	14	21.2	9
Rabies	0	0	0	0	0	0	0
Tularaemia	0	0	0	0	0	0	0
<b>Grand Total</b>	<b>25,417</b>	<b>19,617</b>	<b>41,822</b>	<b>16,945</b>	<b>38,127</b>	<b>28,389</b>	<b>11,171</b>

NN = not notifiable; NEC = not elsewhere classified

\* Excluding mycobacterial diseases, sexually transmitted infections, blood-borne viruses, Carbapenemase-producing Enterobacterales, rheumatic fever and rheumatic heart disease



## Appendix 2: Notifiable conditions by rate per 100,000 population, South Australia, 2015 to 2020\*

Notifiable condition	2015	2016	2017	2018	2019	5 year average	2020
<b>Enteric diseases</b>							
Botulism	0	0	0	0	0.1	0	0
<i>Campylobacter</i> infection	107	187	180.7	177.6	187.7	168	154
Cholera	0.1	0	0	0	0	0	0
Cryptosporidiosis	24.7	25.3	20.7	11.3	7.3	17.9	7.3
Hepatitis A	0.6	0.4	1.3	0	0.8	0.6	0.2
Hepatitis E	0.1	0.2	0.1	0	0.1	0.1	0.1
Listeriosis	0.2	0.2	0.3	0.3	0.1	0.2	0.1
Paratyphoid	0.5	0.2	0.3	0.4	0.7	0.4	0.1
<i>Salmonella</i> infection	74.4	91.9	84.5	74.7	67.1	78.5	38
Shiga toxin-producing <i>E. coli</i> infection (STEC)	2.6	10.2	18.2	18	16.8	13.2	12.3
Haemolytic uraemic syndrome (HUS) / thrombotic thrombocytopenic purpura (TTP) infection	0.1	0	0.1	0	0.1	0	0.1
<i>Shigella</i> infection	4.5	10.7	17.3	25.3	16.2	14.8	6.9
Typhoid	0.5	0.4	0.3	0.3	0.6	0.4	0.2
<i>Vibrio parahaemolyticus</i> infection	NN	0.5	0.3	0.6	0.5	0.5	0
Yersinosis	3.9	5.1	4.3	6.3	6.4	5.2	4
<b>Quarantinable diseases</b>							
Influenza (avian in humans)	0	0	0	0	0	0	0
Middle East respiratory syndrome coronavirus (MERS-CoV)	0	0	0	0	0	0	0
Coronavirus 2019 (COVID-19)	NN	NN	NN	NN	NN	0	32.7
Plague	0	0	0	0	0	0	
Severe acute respiratory syndrome (SARS)	0	0	0	0	0	0	
Smallpox	0	0	0	0	0	0	
Viral haemorrhagic fever	0	0	0	0	0	0	
Yellow fever	0	0	0	0	0	0	
<b>Other infectious notifiable diseases</b>							
Creutzfeldt-Jakob disease	0.3	0.1	0.2	0.3	0.2	0.2	0.4
Legionellosis	1.6	1.6	2.3	1.8	2.6	2	3.3
Leprosy	0	0	0.1	0	0	0	0
<b>Vaccine preventable diseases</b>							
Diphtheria	0	0	0	0.1	0	0.02	0.1
<i>Haemophilus influenzae</i> (invasive)	0.9	1.2	0.8	1.4	1.5	1.16	1.2
<i>Haemophilus influenzae</i> type b (invasive)	0.1	0.1	0	0.2	0.1	0.1	0.1
Influenza A	407	412	1062	240.8	1281.4	680.5	70.9
Influenza B	515	48.1	591.2	100.7	265.2	304	18.5
Measles	0.2	0.6	0.1	0.1	0.2	0.24	0.3
Meningococcal disease (invasive)	1.8	1.6	2.1	2	1.5	1.8	0
Mumps	2.2	1.1	3.7	0.6	0.5	1.6	0.7
Pertussis	76.4	114	103.6	41.2	17.6	70.5	16.4
Pneumococcal disease (invasive)	7.4	8	12.4	8.5	10.5	9.4	6.7

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Notifiable condition	2015	2016	2017	2018	2019	5 year average	2020
Polio virus infection	0	0	0	0	0	0	0
Rotavirus	66.3	25.5	79	28.6	45	48.9	20.5
Rubella	0.1	0	0	0	0	0	0.1
Rubella - congenital	0	0	0	0	0	0	0
Tetanus	0	0	0.1	0	0.1	0.04	0
Varicella zoster (unspecified)	21.5	24.3	8.6	8.5	5.5	12	23
Varicella zoster (chickenpox)	27	25	29	32	37.8	23.8	29
Varicella zoster (shingles)	137	137	165.8	178	194.4	126.9	177
<b>Vector borne diseases</b>							
Barmah Forest virus infection	0.1	0.3	0.2	0	0.3	0.2	0.3
Chikungunya virus infection	0.1	0.4	0.1	0	0.2	0.2	0.3
Dengue virus infection	4.4	6.7	2.4	0	3.9	3.5	1.4
Japanese encephalitis virus infection	0	0	0	0	0	0	0.1
Malaria	0.1	0.6	0.5	0	2.4	0.7	0.6
Murray Valley encephalitis infection	0	0	0	0	0	0	0
Ross River virus infection	6.6	5.9	30.2	0	2.6	9.1	3.3
West Nile virus - Kunjin variant	0	0	0	0	0	0	0
Zikavirus infection	0.1	0.1	0	0	0	0	0
<b>Zoonoses</b>							
Anthrax	0	0	0	0	0	0	0
Australian bat lyssavirus infection	0	0	0	0	0	0	0
Brucellosis	0	0	0.1	0	0	0	0
Hendra virus infection	NN	0	0	0	0	0	0
Leptospirosis	0	0.1	0.1	0	0.1	0.1	0.1
Lyssavirus (NEC)	0	0	0	0	0	0	0
Psittacosis/Ornithosis	0.1	0	0.1	0	0.1	0.1	0
Q Fever	0.7	1.6	1.3	0	0.8	0.9	0.5
Rabies	0	0	0	0	0	0	0
Tularaemia	0	0	0	0	0	0	0

NN = Not notifiable; NEC = not otherwise classified

\* Excluding mycobacterial diseases, sexually transmitted infections, blood-borne viruses, Carbapenemase-producing Enterobacterales, rheumatic fever and rheumatic heart disease

## Appendix 3: Summary of outbreaks reported in 2020 (excluding COVID-19)

### 2020 Outbreak Investigations by disease type

#### **Salmonella Hessarek – Primary Produce – Ongoing from previous annual report**

An ongoing outbreak initiated in 2019 and linked to the same source as an outbreak in 2017 (of the same serotype), continued into 2020. In 2020, there were 36 cases of *S. Hessarek* reported. Nine cases were hospitalised and 28 were interviewed. Of these, all consumed eggs and 22 named the same egg brand. Several cases have consumed raw eggs, including: six people consuming raw eggs in a drink, three consuming raw cake batter, one consuming hollandaise sauce and one had home-made ice cream. In response to investigations, there have been ongoing improvements on the farm where the eggs are produced. A media campaign was run with targeted advertising on social media to highlight the risks of raw egg consumption.

#### **Salmonella Typhimurium phage type 9 – Restaurant – January**

Five cases of *Salmonella* (four further typed as *S. Typhimurium* phage type 9 MLVA 03-15-08-11-550, one as not further typed (PCR only)) consumed food from the same take away venue in a regional town in South Australia. Foods consumed included hamburgers, salad rolls, steak sandwich and a hot dog, with foods purchased between 18 and 29 January 2020. An EHO inspected the premises and collected food and environmental samples. Cross contamination issues were identified, and an uncooked beef hamburger patty was positive for *S. Typhimurium* phage type 9 MLVA 03-15-08-11-550. However, only two cases reported eating a hamburger. Although cross contamination issues were identified, the vehicle was not able to be definitively identified.

#### **Salmonella Typhimurium phage type 9 – Restaurant – January**

Four cases of *S. Typhimurium* MLVA 03-15-08-10-550 and one of MLVA 03-15-08-11-550 (four typed as phage type 9 and one as untypeable) ate at the same café in February 2020. Four cases consumed burgers and one case consumed salmon and avocado. An EHO inspected the premises, and a number of sanitation issues were identified and rectified.

#### **Rotavirus – Childcare centre – February**

An outbreak of rotavirus was reported in an aged care facility in a regional area of SA with 19 residents and one staff member ill between 19 February and 27 February 2020. Two people submitted specimens and one was positive for rotavirus. The investigation was unable to determine if the transmission mode was foodborne, environmental or person to person.

#### **Salmonella Typhimurium phage RDNC – Multi-Jurisdictional Outbreak Investigation – February**

Twenty-one South Australian residents were confirmed with *S. Typhimurium* phage type RDNC MLVA 05-16-13-11-490, with illness onsets in February and March 2020. Sixteen of the SA cases ate lettuce or a bagged salad product. Nationally, there were a total of 1,063 cases, confirmed to be part of the MJOI, with the majority from Queensland (65%). A case analytical study including cases from Queensland, Victoria, South Australia and New South Wales was undertaken. Several foods were identified with significant odds ratios. Bagged salad products had the highest odds ratio of 9.2 (95% confidence interval 3.6 – 23.1;  $p < 0.001$ ) and the highest attack rate of 87%. Multiple food items were sampled (1,021 samples collected nationally) and there were no detections of the outbreak strain of *Salmonella* in any sample.

#### **Salmonella Typhimurium phage RDNC – Restaurant – April**

Two cases of *Salmonella Typhimurium* phage type RDNC with an uncommon MLVA 03-17-10-13-523, were reported from the same metropolitan council area with onsets of illness in March 2020. Both cases reported eating chicken meals at the same restaurant within a week of each other. An EHO inspected the premises with several non-compliance issues identified. Corrective action was taken.

**Varicella virus (Chickenpox) – School - September**

An outbreak of chickenpox was reported in six children attending the same primary school, with two cases confirmed by laboratory testing. All cases had been vaccinated against chickenpox. There were no immunocompromised staff/students or pregnant staff at the school that required further public health action. Information was provided to the school.

**Varicella virus (Chickenpox) – School - September**

An outbreak of chickenpox was reported in 41 children attending the same primary school with ten cases confirmed by laboratory testing or medical notification. Seven of the confirmed cases had been vaccinated against chickenpox. There were no immunocompromised staff/students or pregnant staff at the school that required further public health action. Information was provided to the school.

**Varicella virus (Chickenpox) – School - September**

An outbreak of chickenpox was reported in 12 children attending the same primary school, with four cases confirmed by laboratory testing or medical notification. Three of the confirmed cases had been vaccinated against chickenpox. There were no immunocompromised staff/students or pregnant staff at the school that required further public health action. Information was provided to the school,

**Varicella virus (Chickenpox) – School - September**

An outbreak of chickenpox was reported in 20 children attending the same primary school and one teacher. Two cases were confirmed by laboratory testing, and both were vaccinated against chickenpox. There were no immunocompromised staff/students or pregnant staff at the school that required further public health action. Information was provided to the school.

**Varicella virus (Chickenpox) – School - November**

An outbreak of chickenpox was reported in 33 children attending the same area school and one teacher. Fourteen cases were confirmed by laboratory testing and thirteen of these had been vaccinated against chickenpox. There were no immunocompromised staff/students or pregnant staff at the school that required further public health action. Information was provided to the school.

**Norovirus – Disability services & support Facility – December**

An outbreak of norovirus was reported in a disability services and support facility in a metropolitan area of SA with 15 ill residents. Three people submitted specimens and all three were positive for norovirus. One resident was hospitalised. The local EHO was informed. The investigation was unable to determine if the transmission mode was foodborne, environmental or person to person.

**Table 8 Outbreaks Reported by Aged Care Facilities, South Australia, in 2020**

Month reported	Agent identified	Number of facilities affected
<b>January</b>	Gastroenteritis, organism not detected	3
	Norovirus	2
	Rotavirus	1
	Influenza	1
<b>February</b>	Norovirus	2
<b>May</b>	Gastroenteritis, organism not detected	1
<b>June</b>	Gastroenteritis, organism not detected	1
<b>August</b>	Gastroenteritis, organism not detected	4
<b>September</b>	Gastroenteritis, organism not detected	1
	Norovirus	1
<b>October</b>	Gastroenteritis, organism not detected	1
<b>November</b>	Gastroenteritis, organism not detected	3
	Norovirus	1
<b>December</b>	Gastroenteritis, organism not detected	3
	Norovirus	1

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For more information

**Communicable Disease Control Branch**  
**Public Health and Clinical Systems**  
PO Box 6  
Rundle Mall SA 5000  
Telephone: 1300 232 272  
[www.sahealth.sa.gov.au](http://www.sahealth.sa.gov.au)



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