



Communicable Disease Control Branch
Disease Surveillance and Investigation Section

Annual Report 2015



Government
of South Australia

SA Health

Disease Surveillance and Investigation Section

2015 Annual Report

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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.

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Communicable Disease Control Branch

Disease Surveillance and Investigation Section

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The Communicable Disease Control Branch (CDCB) conducts statewide surveillance for notifiable diseases enabling analysis of health data and initiation of specific public health actions to prevent further spread of disease. Specified data are provided regularly to the National Notifiable Diseases Surveillance System. Weekly summaries of notifiable diseases in South Australia (SA) are published on the SA Health website. Included are counts of notified infections and information about current cluster and outbreak investigations, in addition to historical data. While notifiable diseases data are collected under the *South Australian Public Health Act 2011*, some investigation and control activities are conducted in conjunction with partner agencies that provide additional authorities under other Acts in SA. Additional expertise may be utilised from other agencies including OzFoodNet Australia, SA Pathology, Biosecurity SA (previously Primary Industries and Resources SA), and Environmental Health Officers (EHO) from Local Government. Partners in SA Health include Food Policy and Programs, Health Protection Programs and Scientific Services.

SUMMARY

Between 1 January and 31 December 2015 a total of 25,140 notifications were collected by the CDCB. This represented a 35% increase in infections compared to 2014 (18,659). There were 21,158 notifications of vaccine preventable disease, including 15,658 cases of influenza and 1297 cases of pertussis, 3,714 notifications of enteric disease, 193 notifications due to vector borne disease, and 13 notifications due to zoonotic infections.

Investigation and control activities included:

- > 15 possible foodborne outbreaks and five cluster investigations
- > 85 non-foodborne clusters of gastrointestinal disease (76 occurring in aged care facilities)
- > 45 cases of Shiga-toxin producing *Escherichia coli* infection
- > 30 cases of invasive meningococcal disease
- > 14 cases of *Legionella pneumophila* serogroup 1 infection
- > 12 cases of Q fever
- > 10 cases of hepatitis A
- > 9 cases of paratyphoid fever
- > 8 cases of typhoid fever
- > 4 cases of measles
- > 2 cases of rubella
- > 1 case of cholera

ENTERIC DISEASES

In 2015 there were 3,714 notifications of enteric infection. This accounted for 15 percent of all disease notifications to CDCB.

Campylobacteriosis

Campylobacter infection accounted for 49 percent of enteric notifications in 2015. There were 1,812 notifications of *Campylobacter* infection in South Australia in 2015, compared with 1,804 in 2014. Cases comprised 963 males and 849 females, with an age range of less than one year to 100 years and a median age of 40 years. Sixteen percent of cases were aged less than 10 years at diagnosis.

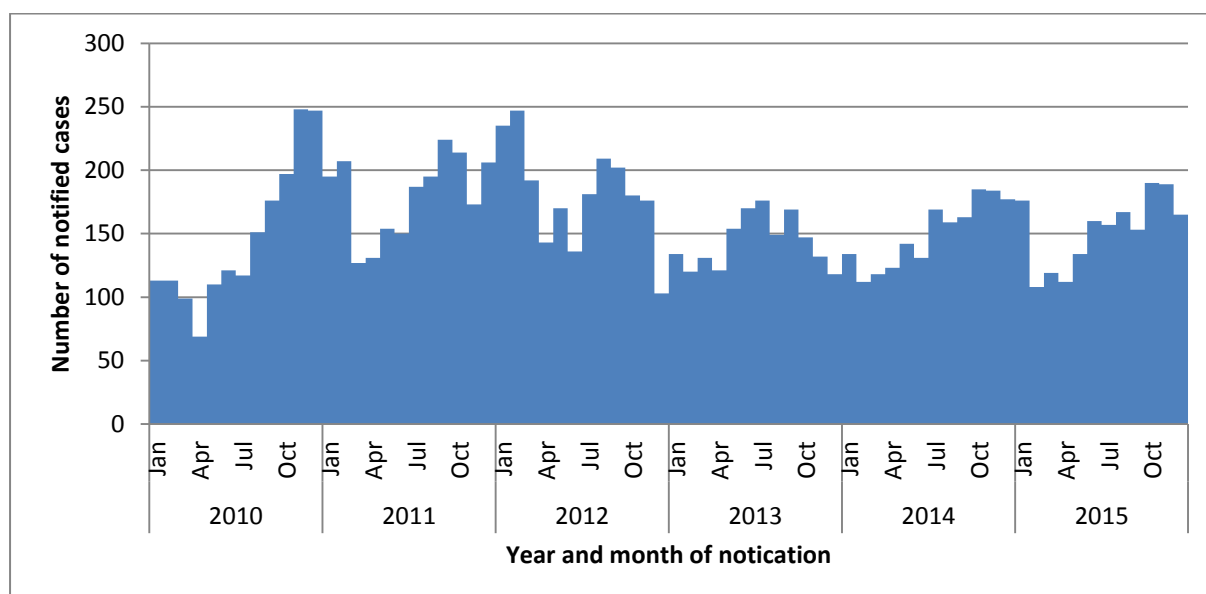


Figure 2: Notified cases of campylobacteriosis in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Salmonellosis

Salmonella infection is the second most commonly notified enteric infection in South Australia. In 2015 there were 1,261 notifications of *Salmonella* infection, compared with 1,219 cases notified in 2014. *Salmonella* infection accounted for 34 percent of enteric disease notifications. Cases comprised 571 males and 690 females, with an age range from less than one year to 96 years and a median age of 29 years. Twenty-three percent of cases were aged less than 10 years at diagnosis.

Laboratory tests characterise *Salmonella* isolates by serotype and phage type. *Salmonella* Typhimurium (STM) was the most common serotype (54%). Among the 684 cases attributed to infection by the STM serotype, isolates were classified into 20 different phage types. Most common phage types were STM 9 causing 376 infections, STM 135 causing 95 infections, STM 135a causing 61 infections, STM 108 causing 41 infections, and STM 44 causing 29 infections.

The two most common non-Typhimurium *Salmonella* serovars were *S. Virchow* causing 95 infections (8%) and *S. Enteritidis* causing 68 infections (5%).

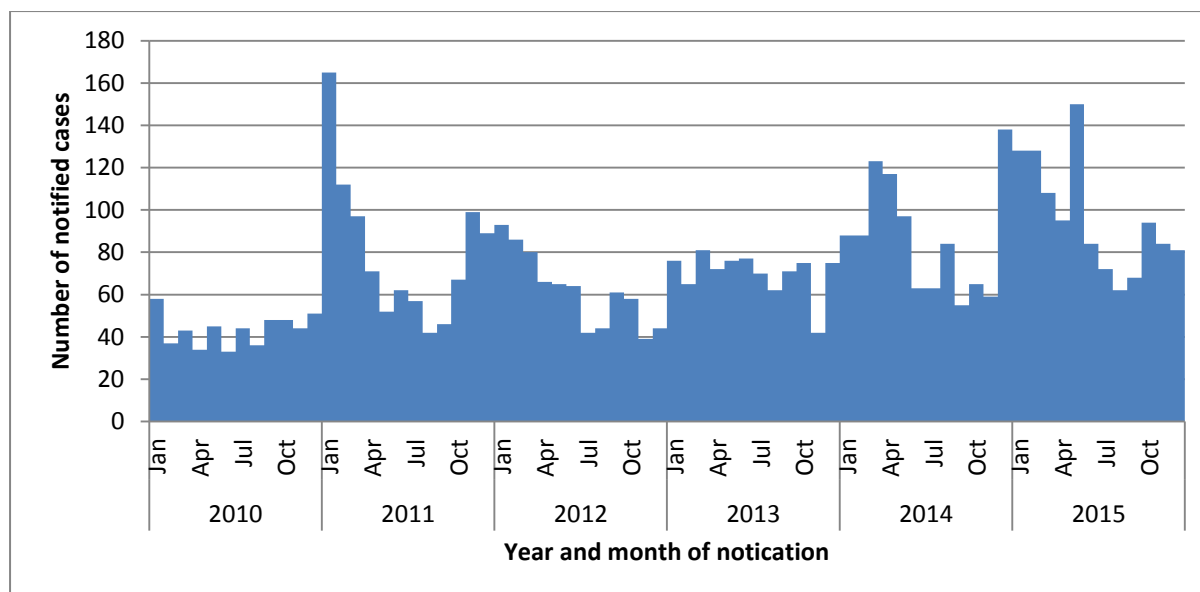


Figure 3: Notified cases of salmonellosis in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Cryptosporidiosis

There were 420 notifications of cryptosporidiosis in South Australia in 2015; this was an increase from 2014 when 224 cases were notified. Cases comprised 234 females (55.7%) and 186 males (44.3%). Twenty seven percent of cases (males: 35%, females: 21%) occurred in the 0-4 year age group, with a further 20% (males: 22%, females: 18%) occurring in the 5-9 year age group. The introduction of nucleic acid testing, which is more sensitive at detecting *Cryptosporidium* infections than traditional methods, has contributed to this increase. Cryptosporidiosis cases with reported risks potentially requiring environmental public health action were referred to the Health Protection Programs section of the Health Protection Branch, SA Health.

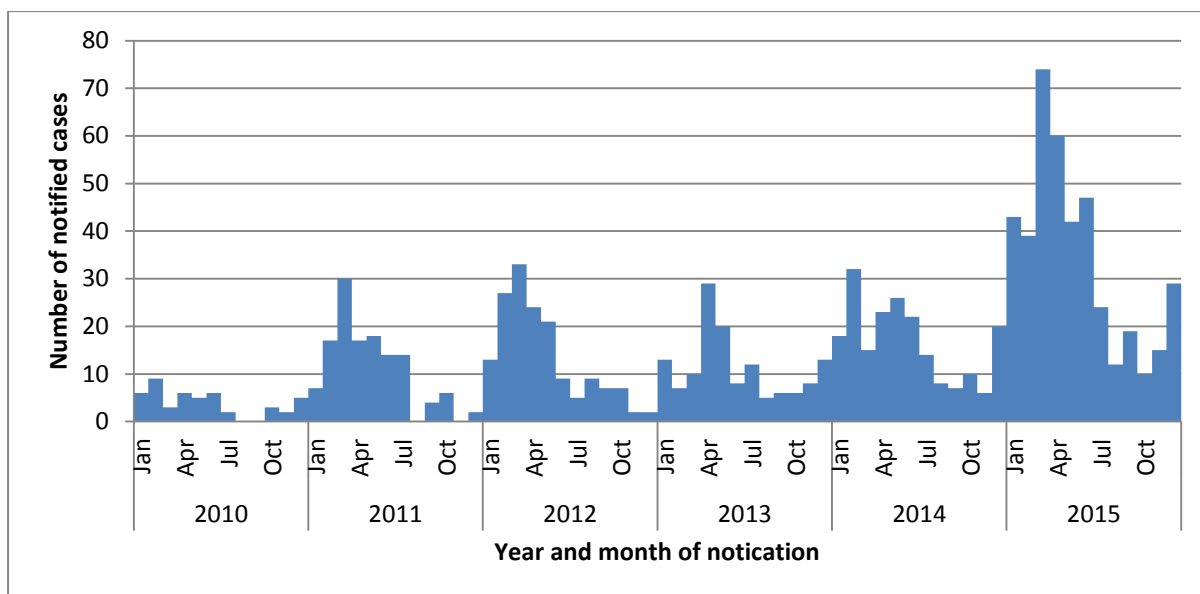


Figure 4: Notified cases of cryptosporidiosis in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Hepatitis A

Ten cases of hepatitis A were reported during 2015, compared to seven cases for 2014. Cases comprised five females and five males, with an age range of 12 to 62 years (median age 30 years). Eight of the cases identified recent overseas travel, one case was a secondary household contact and one case was linked to the national outbreak of hepatitis A infection associated with frozen mixed berries. One of the cases who acquired their infection overseas identified as Torres Strait Islander. None of the 2015 cases had been vaccinated against hepatitis A virus. Contact tracing was undertaken for all cases and vaccine or immunoglobulin was recommended for close contacts.

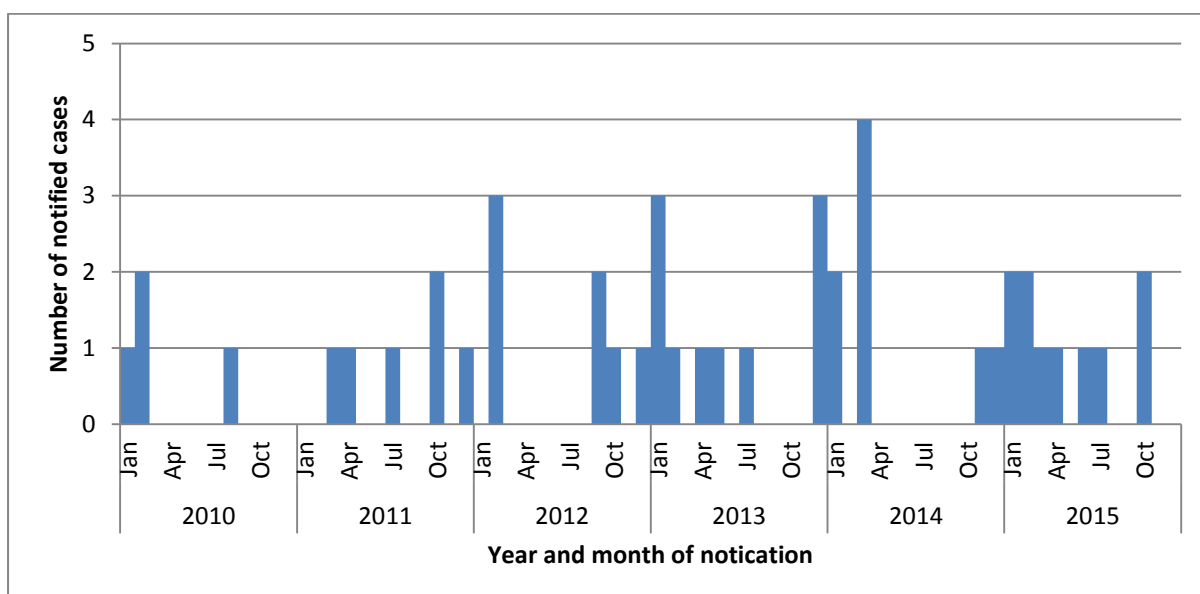


Figure 5: Notified cases of hepatitis A in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Hepatitis E

There was one notification of hepatitis E infection in South Australia in 2015. This was the first notification since 2006 in South Australia and the only South Australian case to be recorded as having no overseas travel. The infection occurred in a 55 year old male from a regional South Australian town. The source of the infection was unable to be determined.

Listeriosis

Four cases of *Listeria monocytogenes* infection were reported in 2015, compared with six in 2014. Cases comprised two males and two females, aged 78 to 93 years (median 80 years). Three cases were further typed as *Listeria monocytogenes* serotype O1, and one case as *L. monocytogenes* serotype O4. There were no deaths due to *Listeria* infection. No links were established between cases and no food sources were identified.

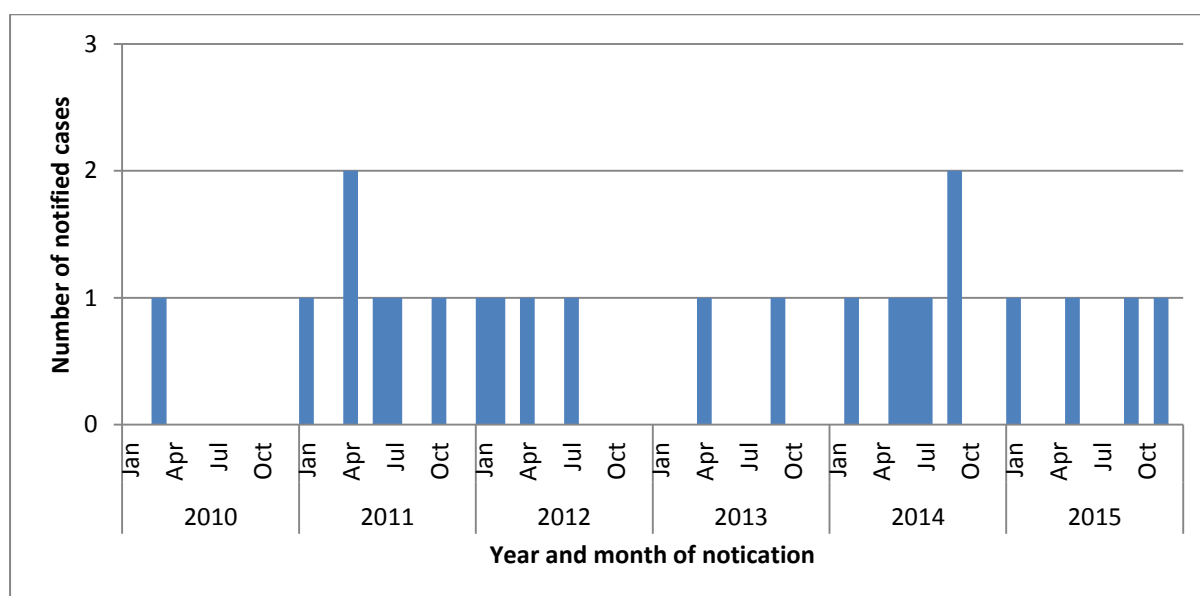


Figure 6: Notified cases of listeriosis in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Typhoid

Eight cases of *Salmonella* Typhi infection were notified in 2014 compared to nine in 2014. Cases comprised four males and four females aged from 5 to 54 years. All cases reported recent overseas travel to the Indian subcontinent. Interviews and contact tracing were undertaken and no other contacts became infected.

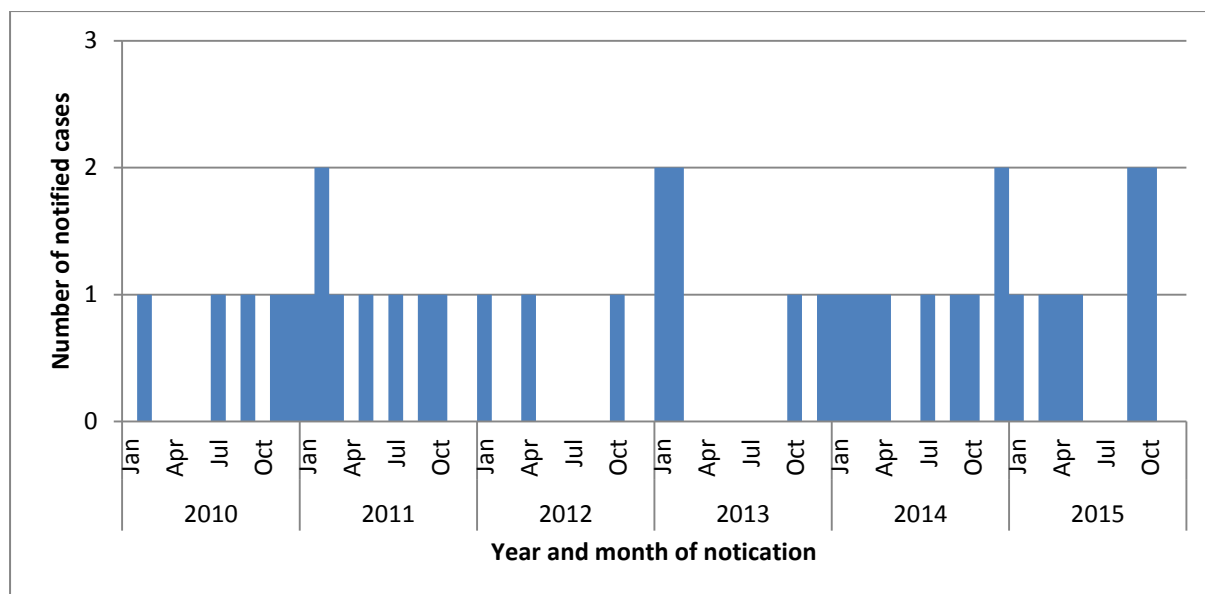


Figure 7: Notified cases of typhoid in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Paratyphoid

There were nine notifications of *Salmonella* Paratyphi infection in South Australia in 2015 which is higher than the two notifications received in 2014. Three cases were further identified as *S. Paratyphi* A and six cases as *S. Paratyphi* B. Five of the cases had travelled to endemic countries prior to onset.

However, four cases had not travelled outside of Australia. This included a cluster of three family members and a child who attended a multicultural childcare centre. Interviews and contact tracing were undertaken and no other contacts became infected. Nine staff and 51 children at the child care centre provided clearance specimens. All samples returned a negative stool test for *Salmonella* Paratyphi.

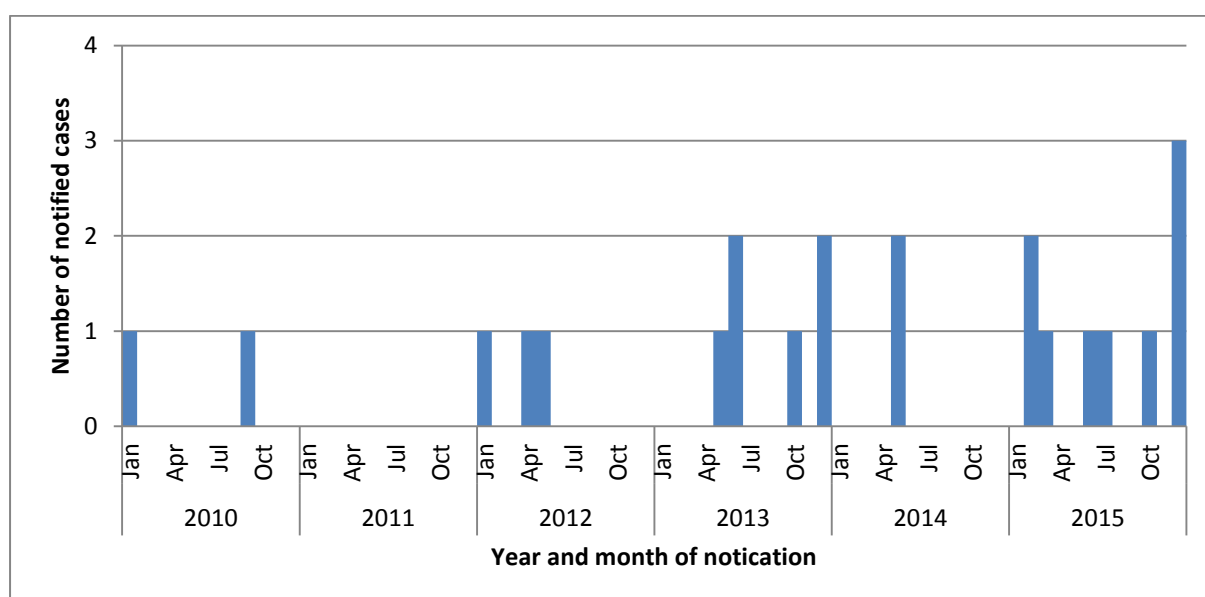


Figure 8: Notified cases of Paratyphoid in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Shiga-toxin producing *Escherichia coli* (STEC)

There were 45 notifications of STEC infection in South Australia in 2015, compared to 49 cases in 2014. There were 21 males and 19 females notified with STEC infection. Three different STEC serotypes were notified simultaneously in one person, and two different STEC serotypes were notified simultaneously for each of three other people, thus accounting for the forty five notifications in 2015. The age range was from 6 months to 90 years (median age: 39.5 years). Laboratory testing by SA pathology provided typing information on 29 of the cases. These included 12 cases of STEC O26, 11 of STEC O157, 4 of STEC O113 and 2 of STEC O111. Twenty three (58%) of the infected persons resided in metropolitan Adelaide.

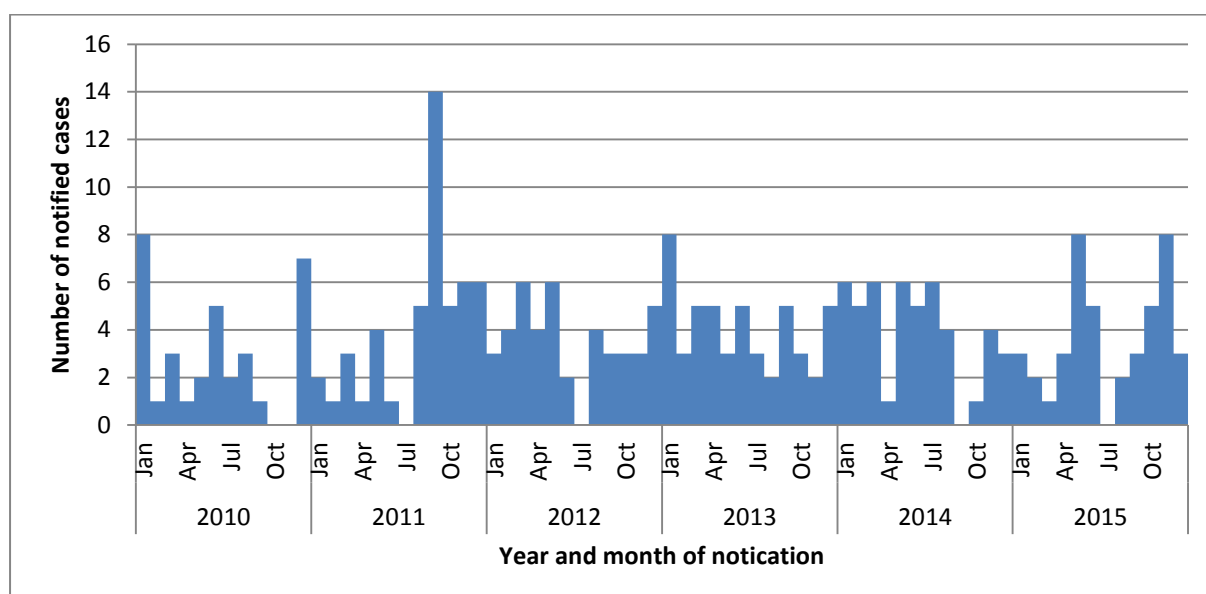


Figure 9: Notified cases of STEC in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Shigellosis There were 76 notifications of *Shigella* infection in South Australia in 2015, with 18 confirmed cases and 58 probable cases. The target genes for *Shigella* are also shared by enteroinvasive *E.coli*, making it difficult to differentiate between these organisms. A probable case definition was created to include isolates that were detected by PCR but failed to grow on culture. Given that only confirmed cases in 2015 are comparable with past data, the remaining analyses presented for *Shigella* are for confirmed cases only, unless otherwise specified.

There were 18 confirmed *Shigella* cases in 2015 compared with 22 cases in 2014. The ages of cases ranged from 8 months to 69 years (median age: 27 years) and there were 7 male and 11 female cases. Three percent of shigellosis cases in 2015 occurred in Aboriginal people compared with 14% in 2014.

Shigella sonnei biotype g caused 44% of the infections in 2015 and was also the most frequently isolated species and type in 2014. *S. sonnei* biotype a was the second most common cause of shigellosis in 2015 accounting for seven of the 18 infections (39%), including two notifications in Aboriginal people.

In 2015, 10 (56%) *Shigella* cases reported overseas travel. This was similar to the proportion of people who acquired their infection overseas in 2014 (45%).

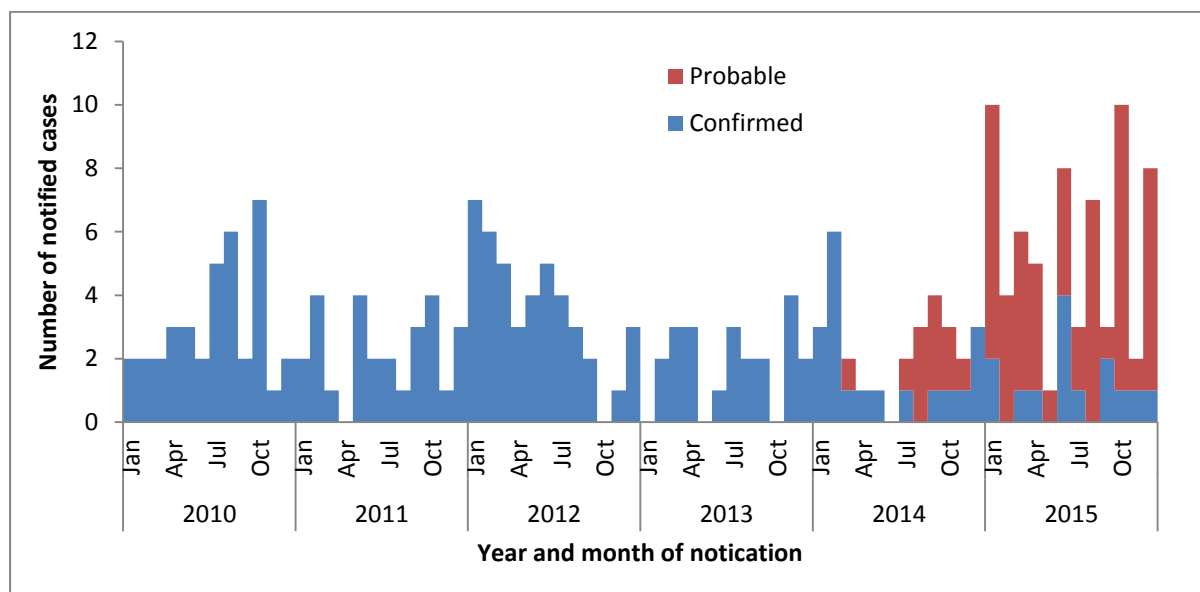


Figure 10: Notified cases of shigellosis in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Yersinia

There were 67 notifications of *Yersinia* infection in 2015, compared to 43 in 2014. Thirty nine (58%) of the 67 cases notified in 2015 were female and 28 (42%) were male. The median age of cases was 34 years (range: 0 to 93 years). Of the 67 cases, 65 (97%) were characterised as *Yersinia enterocolitica* with the remaining two cases reported as *Yersinia* species only with no further characterisation. In 2015, the Australian Salmonella Reference Centre ceased performing further characterisation of *Y. enterocolitica* biotypes, thus, no biotype information is available for the 2015 notifications. Private laboratories began PCR testing for *Y. enterocolitica* in July 2014 and the increase in *Yersinia* notifications evident in Figure 11 coincides with the introduction of PCR testing.

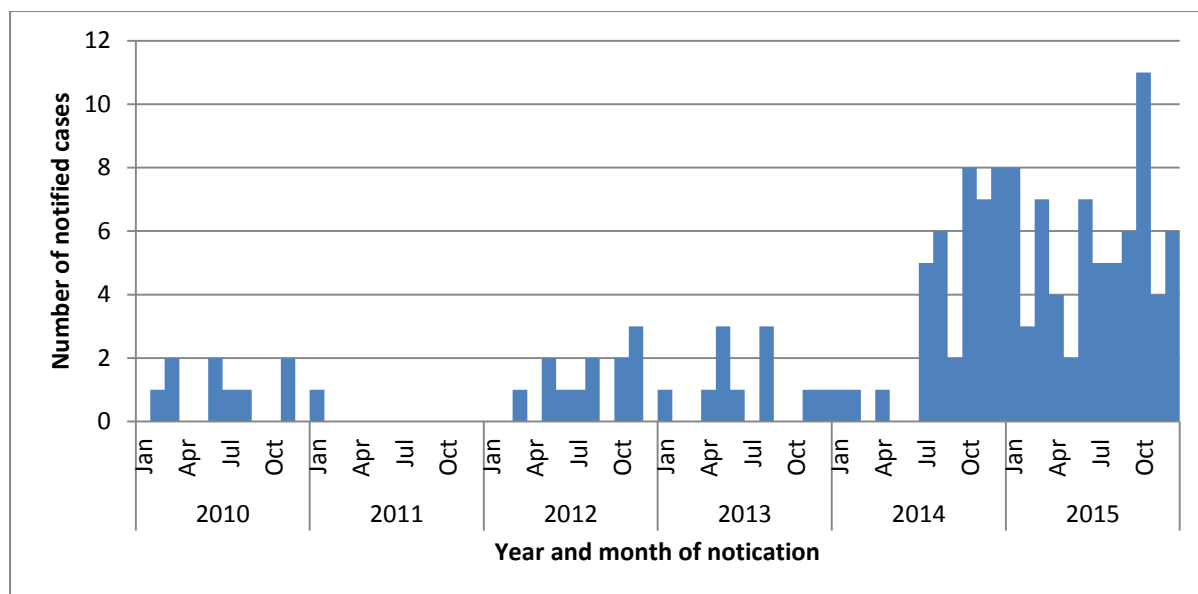


Figure 11: Notified cases of yersiniosis in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Cholera

There was one notification of *Vibrio cholerae* infection in South Australia in 2015 compared to zero notifications in 2014 and a five year average of two cases per year for the period 2010 to 2014. The infection, which was identified as Serogroup 01, occurred in a 78 year old male who had travelled to Indonesia during the incubation period.

VACCINE PREVENTABLE DISEASES

Influenza

During 2015, there were 15,658 cases of influenza reported. This is the highest number of notifications recorded since influenza became notifiable in South Australia in 2008. Of these cases, 44% were influenza type A, and 56% were influenza type B. Cases comprised 46% males and 54% females, with a median age of 30 years.

The peak activity in 2015 occurred during late August and early September. Of those cases where hospitalisation status is known, 9% were hospitalised, and 71 influenza-associated deaths were recorded.

The highest number of influenza notifications occurred in the 0-4 years (n=1731) and the 5-9 years (n=2204) age groups, which together accounted for 25 % of all notifications. Overall in 2015, 71% of cases were from metropolitan Adelaide and 29% were from rural South Australia.

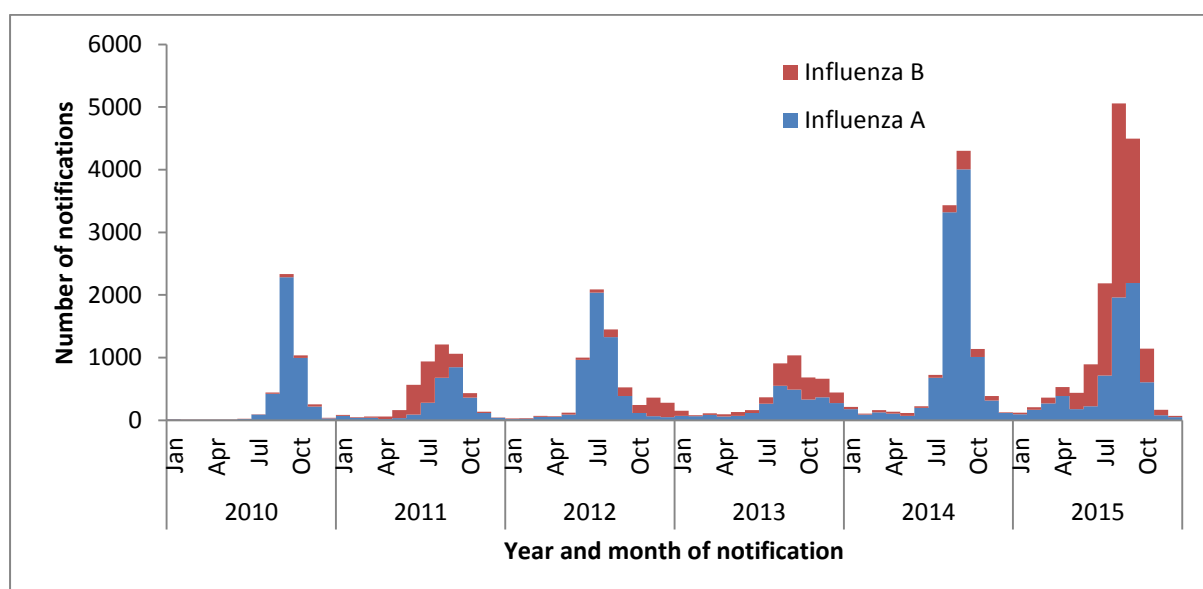


Figure 12: Notified cases of influenza in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Invasive Pneumococcal Disease

There were 126 cases of invasive pneumococcal disease reported in 2015, compared to 134 cases reported in 2014. Cases comprised 69 males and 57 females. The age ranged from less than one year to 93 years, with a median age of 54 years. Twenty-three cases (18%) were aged less than 5 years.

Invasive pneumococcal disease was recorded as the cause of death for nine cases. These cases were aged between 27 years and 89 years.

Twenty cases were identified as occurring in Indigenous Australians and 106 cases occurred in non-Indigenous Australians.

Serotyping of isolates was completed for 96 cases (76%). Of the remaining 30 cases, 22 were not serotyped because they were diagnosed by PCR, and serotyping was not conducted for a further eight cases. The most common serotypes identified were 19A (11 cases), 19F (9 cases), 11A (6 cases), 15A (6 cases), 23A (6 cases) and 6A (6 cases).

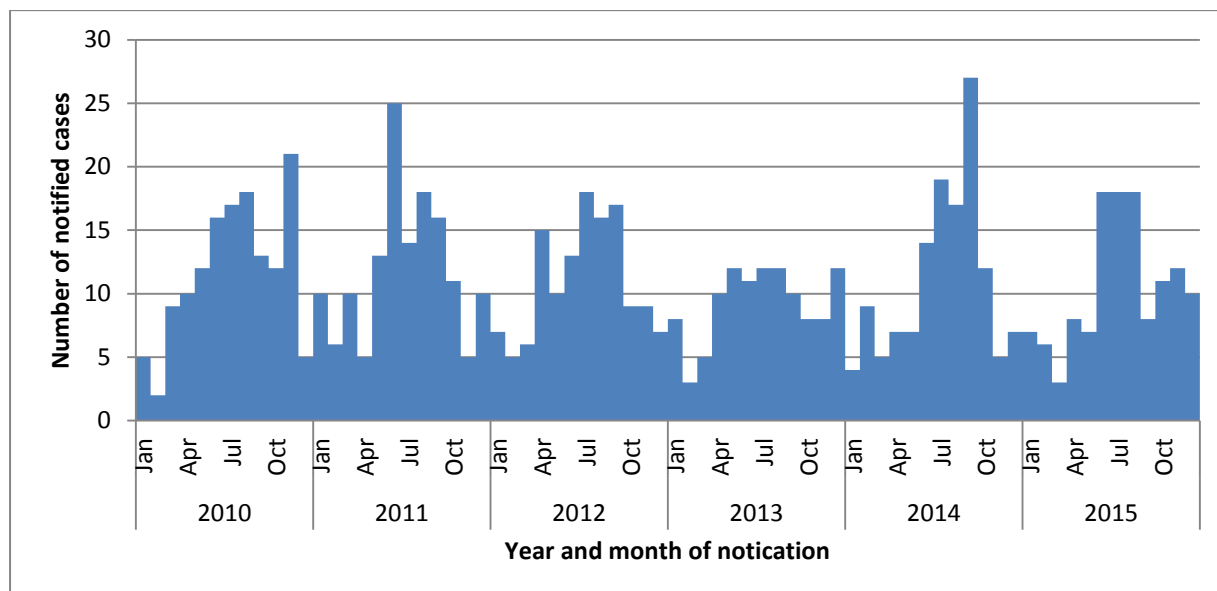


Figure 13: Notified cases of invasive pneumococcal disease in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Rotavirus

There were 1,127 cases of rotavirus infection reported in 2015, compared to 807 cases in 2014. Cases comprised 562 (50%) males and 565 (50%) females. The median age was 2 years, with an age range of less than one year to 101 years.

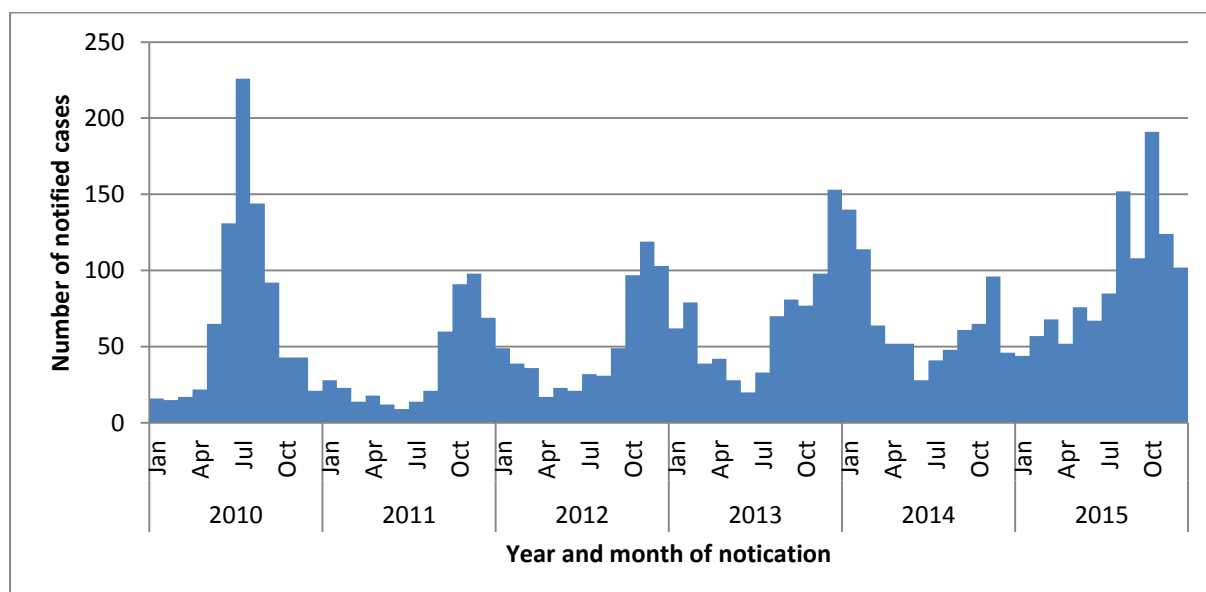


Figure 14: Notified cases of rotavirus infection in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Rubella

During 2015, there were two cases of rubella reported, which is equal to the number of notifications in 2014. Cases comprised of two males aged 52 and 74 years, both were not vaccinated.

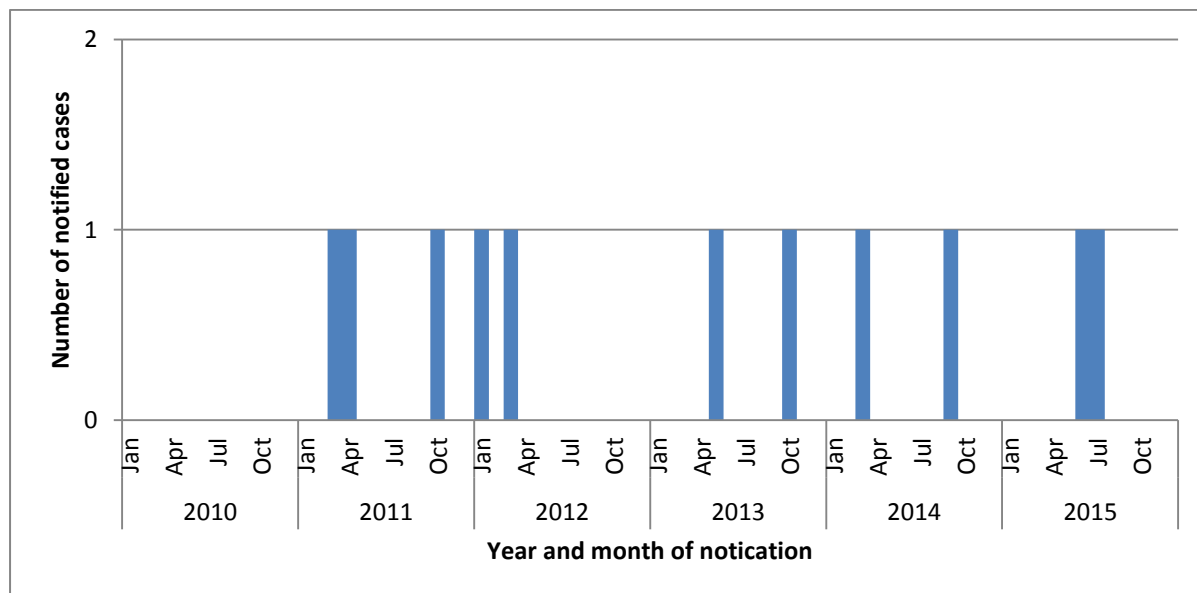


Figure 15: Notified cases of rubella in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Measles

During 2015, four cases of measles were notified, compared to 16 cases notified in 2014. Cases comprised two females and two males, with an age range of nine to 54 years (median age 13 years). The first case had travelled to the Philippines and indicated they had only received one vaccination. The second case travelled to Indonesia and was unvaccinated. Two household contacts of this second case who were unvaccinated subsequently developed measles.

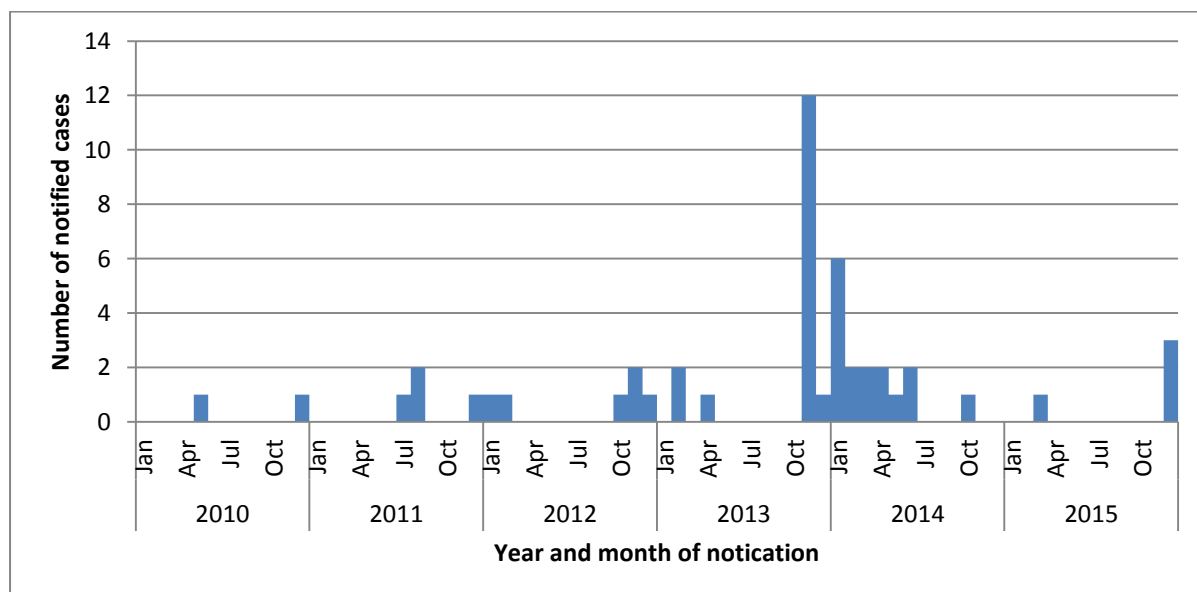


Figure 16: Notified cases of measles in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Varicella-zoster virus infection

In 2015 there were 2,906 cases of varicella-zoster virus infection reported, compared to 2,510 cases in 2014. Cases comprised 1,328 males and 1,578 females and were aged from less than one year to 98 years.

Medical notification characterised 448 (15%) varicella zoster virus infections as chickenpox and 2,331 (80%) as shingles. Four percent of cases were not further characterised. Cases notified as chickenpox had an age range of less than one year to 92 years with 81 percent of cases aged less than 30 years (median age 11 years). Cases notified as shingles ranged in age from less than one year to 98 years with 93 percent aged 20 years or more (median age 59 years).

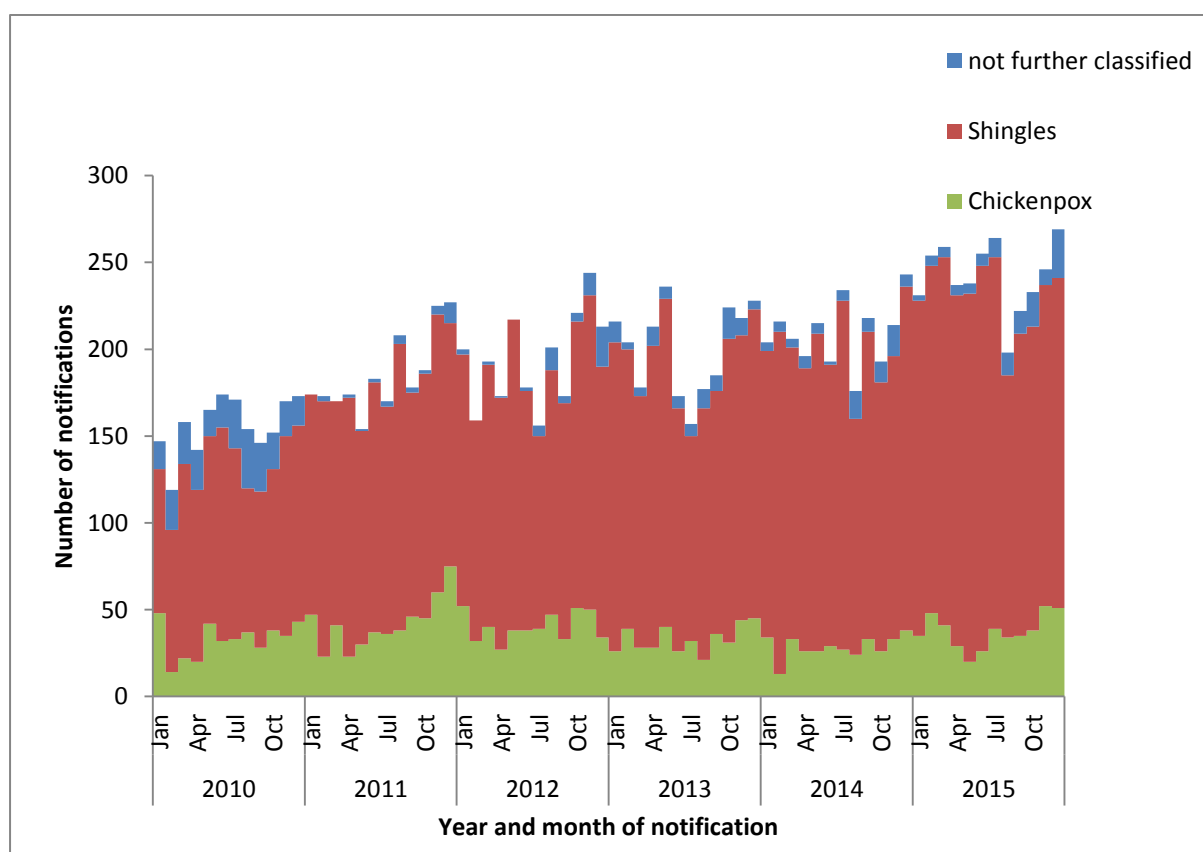


Figure 17: Notified cases of varicella-zoster virus infection in SA, by clinical syndrome (chickenpox, shingles, and varicella not further classified) and by year and month of notification, 1 January 2010 to 31 December 2015.

Mumps

There were 38 cases of mumps in 2015 compared to 14 cases in 2014. Cases comprised 16 females and 22 males, with an age range of two to 68 years (median age 30 years). Fourteen cases indicated they were vaccinated. Five cases reported overseas travel while the remaining 33 cases reported acquisition in South Australia. A peak of 16 cases were notified in January, with local transmission indicated.

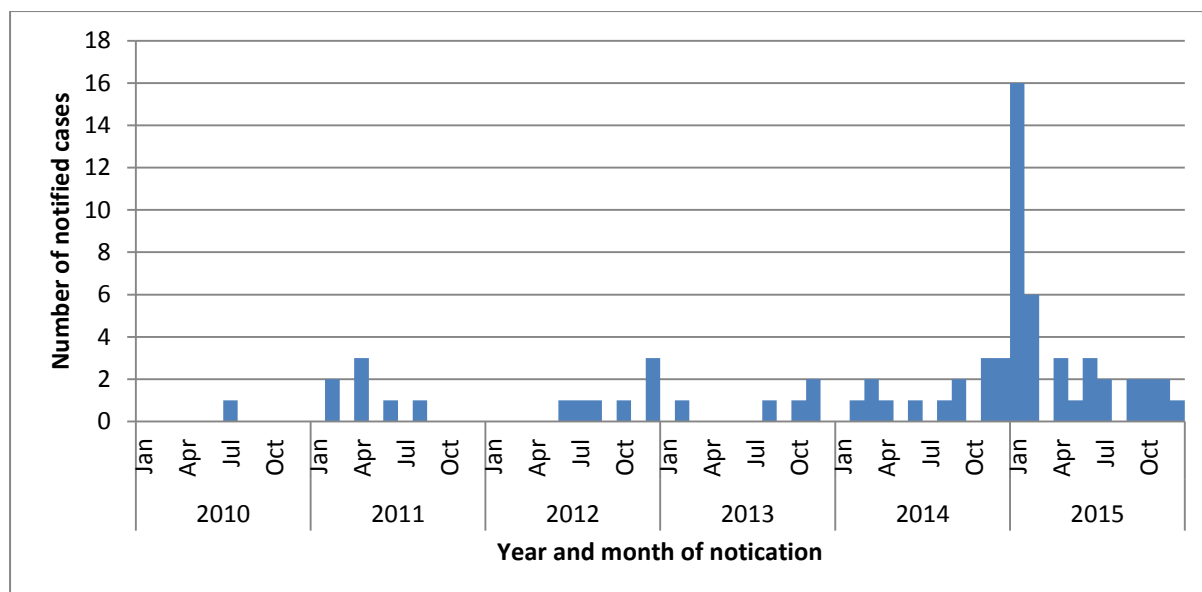


Figure 18: Notified cases of mumps in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Pertussis

In 2015, 1297 cases of pertussis were notified, compared to 505 in 2014. Cases comprised 609 males and 688 females. Ages ranged from less than one year to 98 years, with a median age of 13 years. Cases were geographically dispersed throughout SA. Seventeen cases were identified as occurring in Indigenous Australians, 1,164 cases occurred in non-Indigenous Australians, and in 116 cases the Indigenous status was not stated.

Ten per cent (133) of cases were aged less than five years at the time of diagnosis. Of the cases aged less than five years, 108 (81%) were fully or partially vaccinated, and 25 (19%) were not vaccinated (of these, three were too young for vaccination).

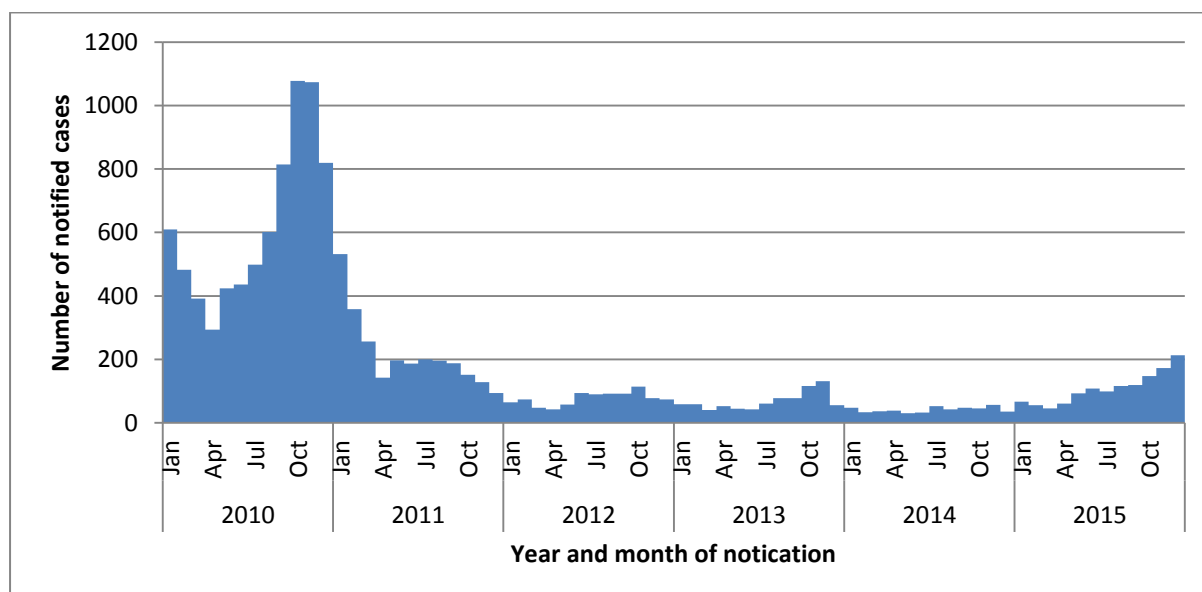


Figure 19: Notified cases of pertussis in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

OTHER INFECTIOUS NOTIFIABLE DISEASES

Invasive Meningococcal Disease

Thirty cases of invasive meningococcal disease were reported in 2015, compared to 32 cases reported in 2014.

Twenty-nine cases were further characterised as *Neisseria meningitidis* serogroup B and one case as serogroup Y. Cases comprised 14 males and 16 females, with an age range of less than one year to 77 years (median age 19 years). Twenty-seven cases were from metropolitan Adelaide and three from rural South Australia.

A 52 year-old female with *N. meningitidis* serogroup B infection died from the illness. In accordance with national guidelines, prompt contact tracing occurred with all cases. Information, clearance antibiotics, and vaccination were recommended as appropriate.

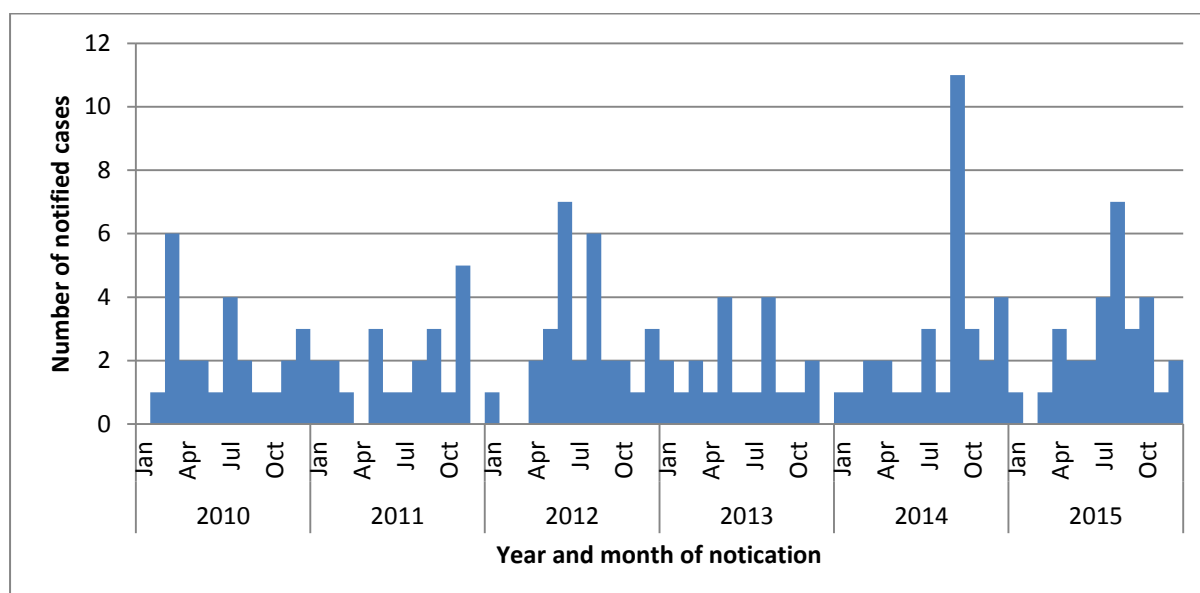


Figure 20: Notified cases of invasive meningococcal disease in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

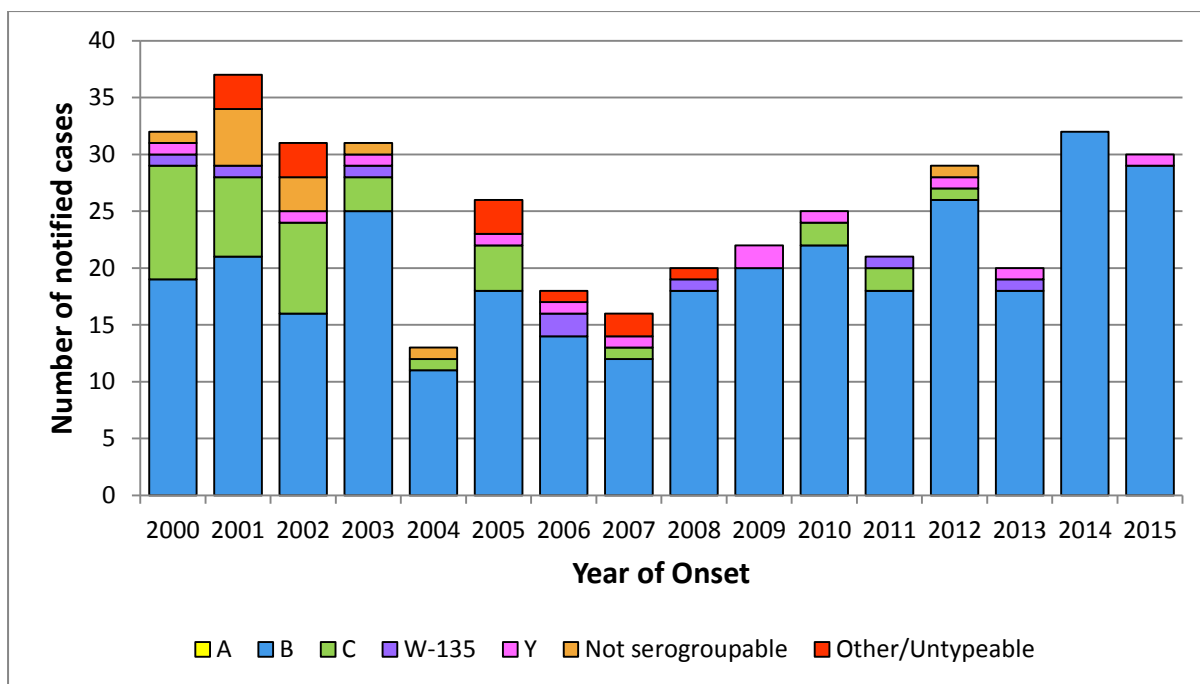


Figure 21: Notified cases of invasive meningococcal disease in SA, by type per year, 2000 to 2015.

Legionellosis

There were 28 cases of legionellosis reported during 2015. Laboratory tests attributed 14 cases to *Legionella pneumophila* serogroup 1, one case to *L. pneumophila* serogroup 2 and 13 cases to *L. longbeachae*. All cases of *L. pneumophila* serogroup 1 were referred to Health Protection Programs for environmental investigation. The notified *L. pneumophila* infections occurred in seven males and eight females with an age range of 28 to 97 years. Two cases died due to their infection. In comparison, the cases of *L. longbeachae* occurred in nine males and four females, with ages ranging from 51 to 94 years, with no deaths attributed to the infection.

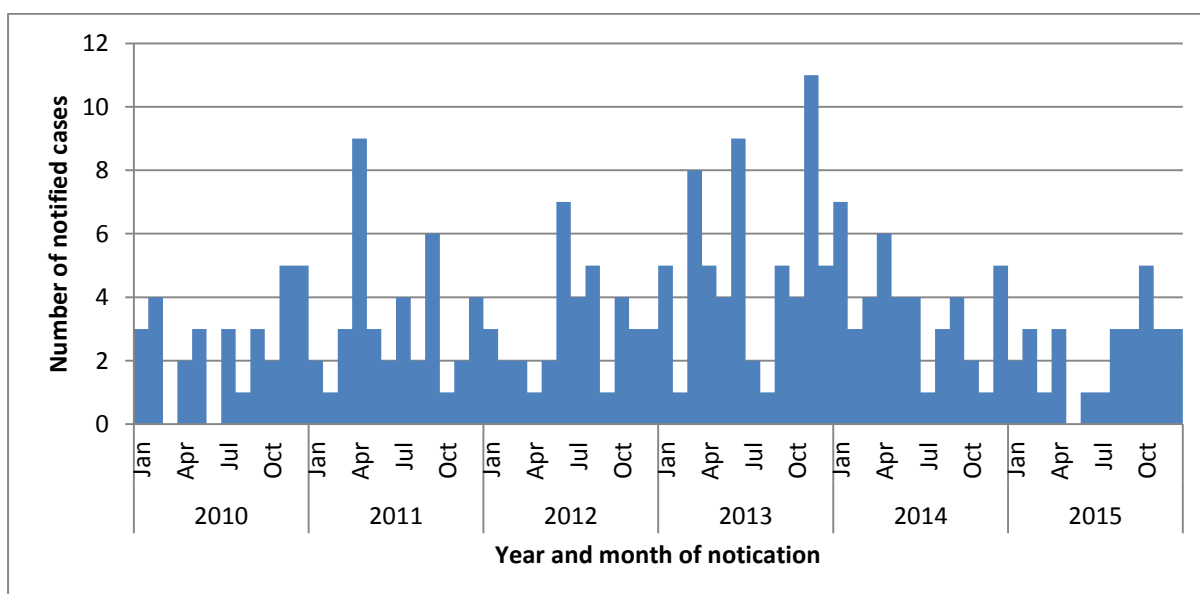


Figure 22: Notified cases of legionellosis in SA, by year and month of notification, 1 January 2010 to 31 December 2015

Creutzfeldt-Jakob disease

In 2015 there were four notified cases of Creutzfeldt-Jakob disease compared with three cases in 2014. Three cases were female and one male. The cases had an age range of 60 to 71 years.

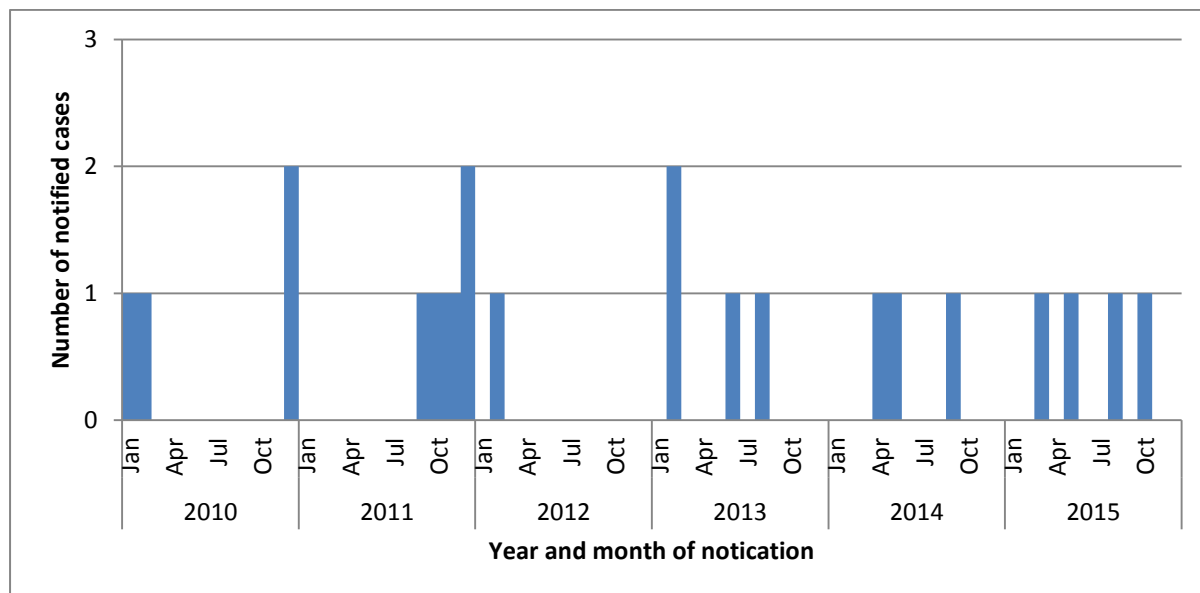


Figure 23: Notified cases of Creutzfeldt-Jakob disease in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

QUARANTINABLE DISEASES

There were no cases of quarantinable diseases reported in 2015. However, 15 persons were actively monitored for signs and symptoms of Ebolavirus disease (EVD) following potential exposure to the disease while overseas in an EVD affected country.

VECTOR BORNE DISEASES

Barmah Forest virus infection

One case of Barmah Forest virus infection was notified in 2015. There have been fewer reports of Barmah Forest virus infection than in recent years due to changes in laboratory testing procedures.

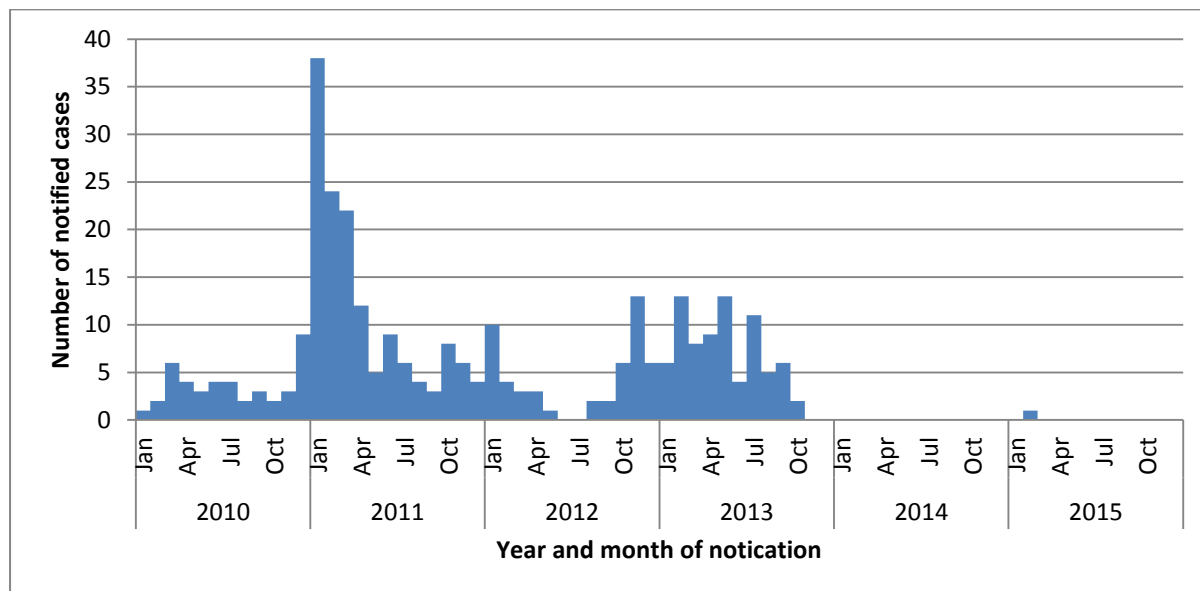


Figure 24: Notified cases of Barmah Forest virus infection in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Ross River virus infection

There were 112 cases of Ross River virus infection notified in 2015, compared with 73 in 2014. Cases comprised 41 males and 71 females, with an age range of 7 to 86 years (median age 41 years). There have been fewer reports of Ross River virus infection than in recent years, partly due to changes in laboratory testing procedures.

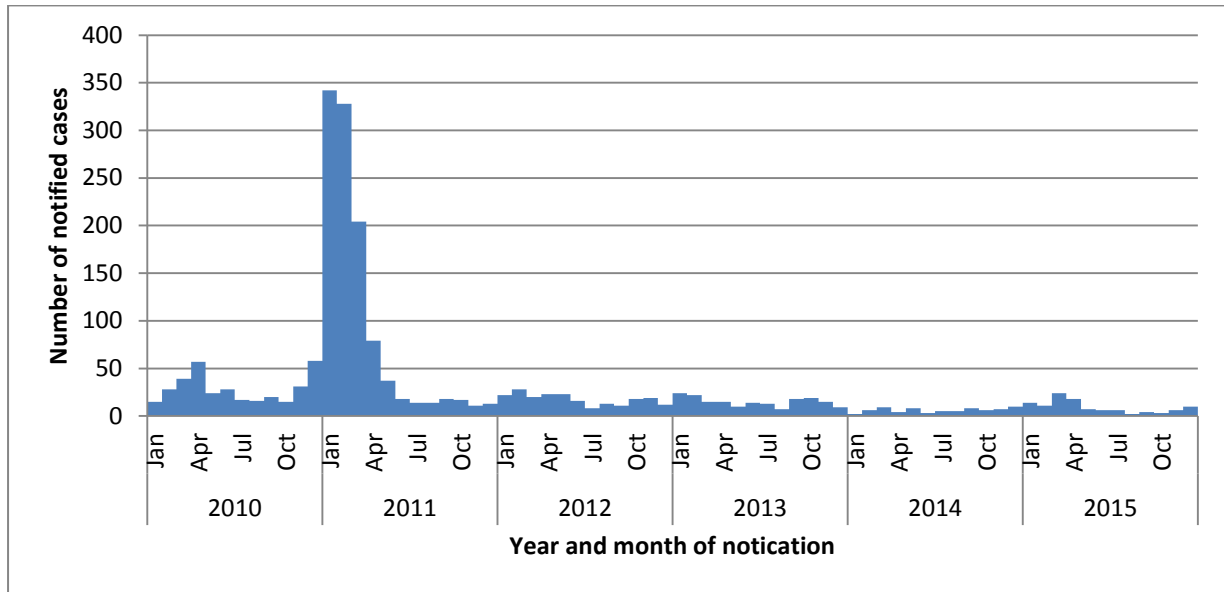


Figure 25: Notified cases of Ross River virus infection in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Chikungunya virus infection

Two cases of chikungunya virus infection were reported during 2015 bringing the total number of cases recorded in SA since it became notifiable to 25. The cases comprised two females with an age range of 35 to 64 years. Both cases reported recent overseas travel to endemic areas.

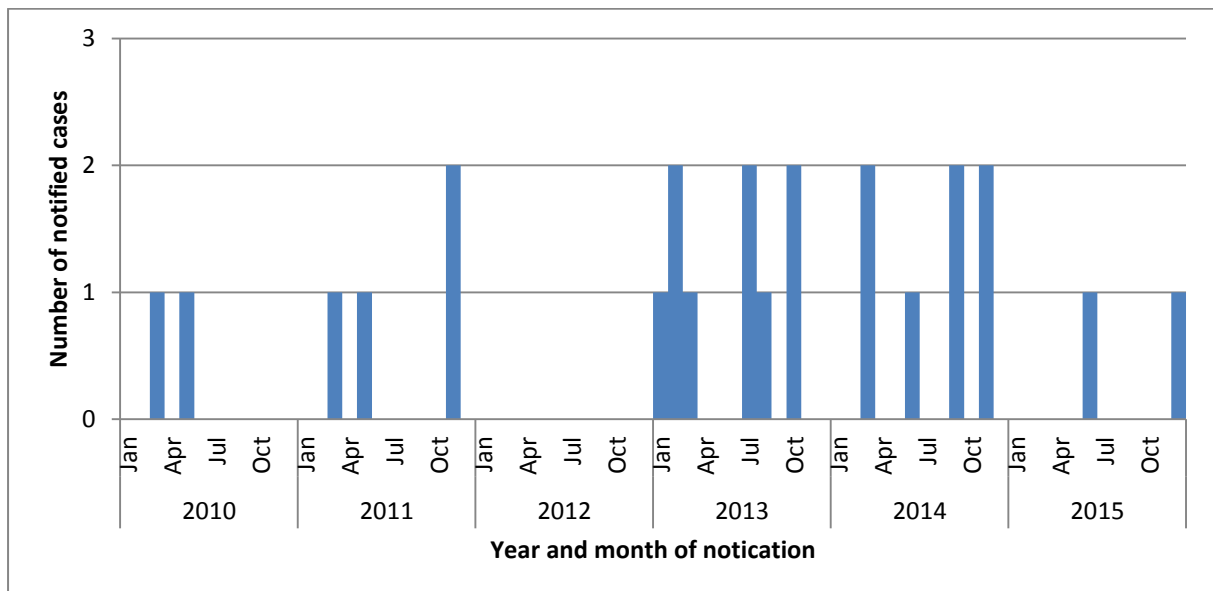


Figure 26: Notified cases of chikungunya virus infection in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Dengue virus infection

In 2015, 75 cases of dengue fever were notified, compared to 72 cases in 2014. Cases included 27 males and 48 females, with an age range of 4 to 83 years. All cases had travelled overseas to dengue endemic countries.

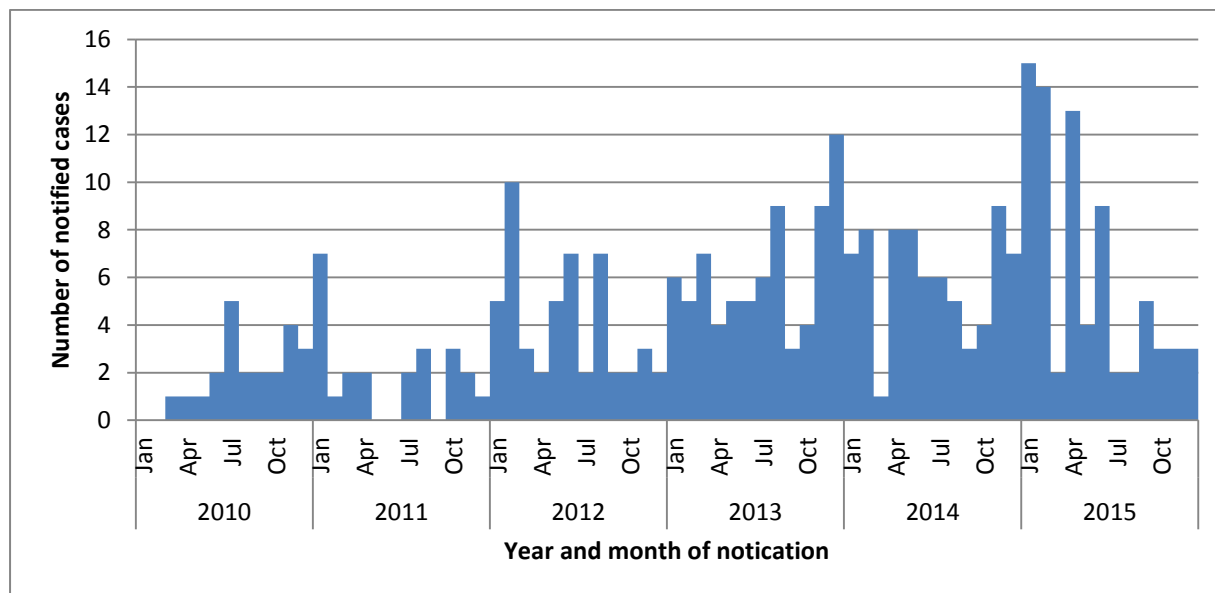


Figure 27: Notified cases of dengue fever in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Malaria

Two cases of malaria were notified in 2015. Both cases were acquired in Africa and were identified as *Plasmodium falciparum*. The cases were both male, and aged between 29 and 30 years. In comparison, six cases were notified in 2014.

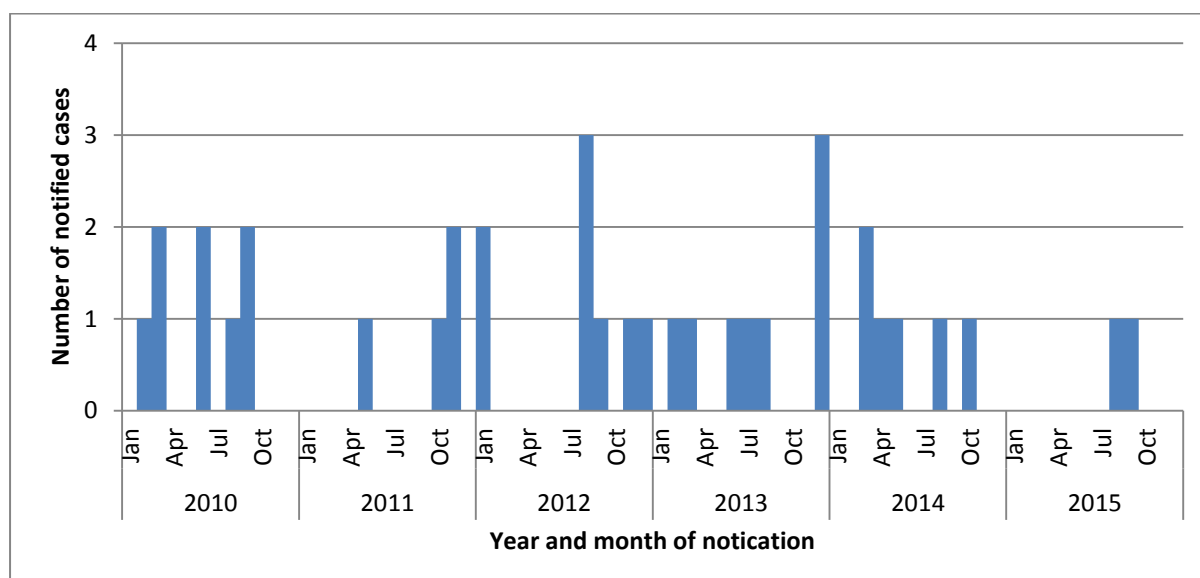


Figure 28: Notified cases of malaria in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Zika virus

One case of zika virus infection was notified in 2015 in a 69 year-old male with travel to Fiji. This is the second case of zika ever reported in South Australia. The previous case was a 53 year old female with travel to Jakarta in 2012.

ZOONOSES

Q Fever

During 2015, 12 cases of Q fever were recorded, compared with 9 cases in 2014. Of the cases, nine were male and three female, with ages between 20 and 54 years. Ten of the cases had occupational exposures for this infection. Only one of the 12 cases reported being vaccinated.

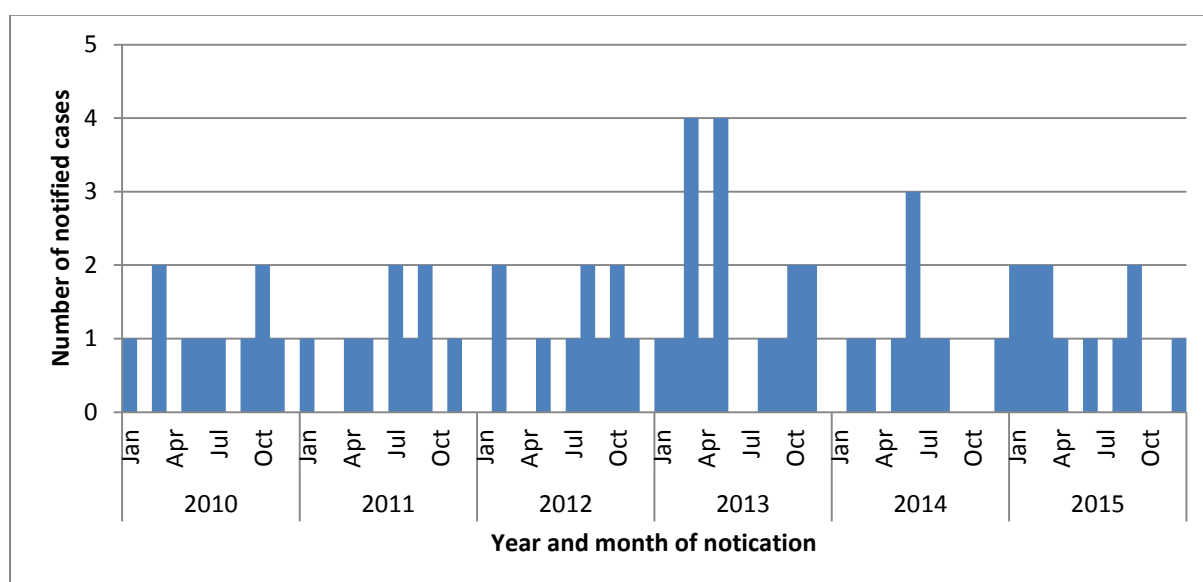


Figure 29: Notified cases of Q-fever in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

Psittacosis (Ornithosis)

One case of psittacosis (ornithosis) was notified in 2015. The case was an 18-year-old female with occupational exposure reported at a zoo in NSW.

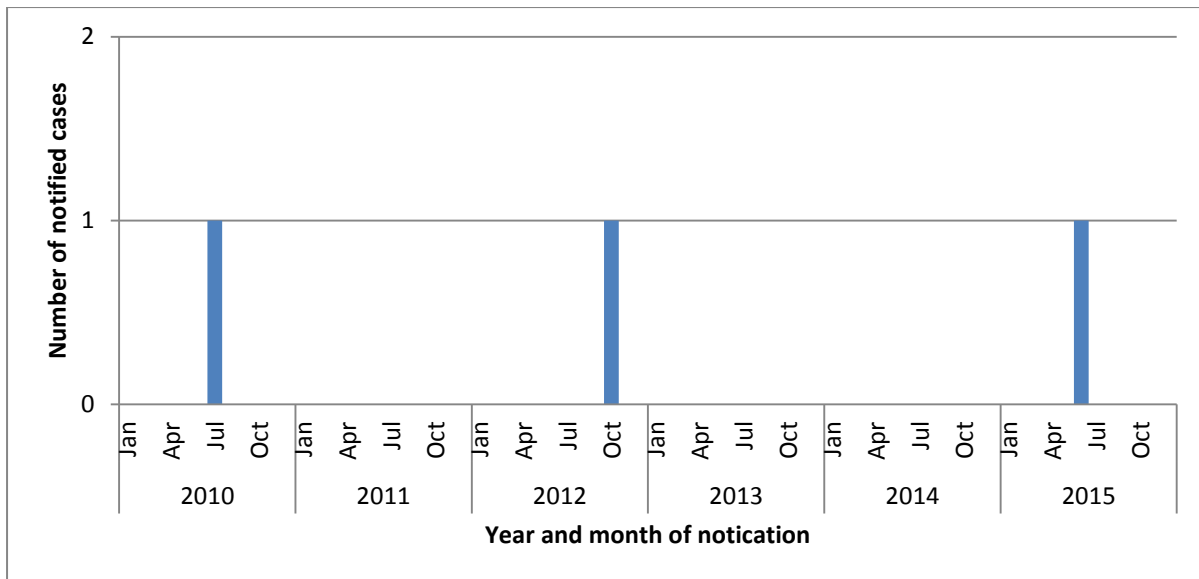


Figure 30: Notified cases of psittacosis (ornithosis) in SA, by year and month of notification, 1 January 2010 to 31 December 2015.

APPENDIX A – NOTIFIABLE DISEASES 2011 TO 2015

Table 1: Notifiable diseases in South Australia 2011 to 2015.

Disease	Year				
	2015	2014	2013	2012	2011
Enteric Diseases					
Botulism	0	0	0	0	0
Campylobacteriosis	1,812	1,804	1,721	2,174	2,163
Cryptosporidiosis	420	224	137	159	129
Hepatitis A	10	7	10	7	6
Hepatitis E	1	0	0	0	0
Listeriosis	4	6	2	4	6
Paratyphoid	9	2	6	3	0
Salmonellosis	1,261	1,219	977	842	1,049
Shiga Toxin producing E.coli/HUS/TTP	45	49	52	48	50
Shigellosis	76	22	30	50	32
Typhoid	8	9	8	3	9
Yersiniosis	67	39	11	12	1
Other Infectious Notifiable Diseases					
Creutzfeldt-Jakob Disease	4	3	4	1	5
Legionellosis	28	44	60	37	39
Leprosy	0	1	1	0	0
Invasive Meningococcal disease	30	32	20	29	21
Quarantinable Diseases					
Cholera	1	0	0	2	0
Highly pathogenic avian influenza in humans	0	0	0	0	0
Plague	0	0	0	0	0
Rabies	0	0	0	0	0
Severe acute respiratory syndrome	0	0	0	0	0
Smallpox	0	0	0	0	0
Viral haemorrhagic fever	0	0	0	0	0
Yellow fever	0	0	0	0	0
Vaccine Preventable Diseases					
Diphtheria	0	0	1	0	0
Invasive Haemophilus influenzae type b	0	1	0	2	0
Influenza A	6,914	10,202	2,730	5,173	2,596
Influenza B	8,744	848	2,090	1,094	2,194
Measles	4	16	16	6	4
Mumps	38	14	5	7	7
Pertussis	1,297	505	820	922	2,627
Pneumococcal disease	126	134	112	132	143
Poliomyelitis	0	0	0	0	0
Rotavirus	1,127	807	782	616	457
Rubella	2	2	2	2	3
Tetanus	0	0	1	1	0
Varicella zoster (unspecified)	127	140	106	72	38
Varicella virus zoster (chickenpox)	448	333	396	481	501
Varicella virus Zoster (shingles)	2,331	2,037	1,907	1,775	1,685
Vector Borne Diseases					
Barmah Forest virus infection	1	0	77	50	141
Chikungunya virus infection	2	7	9	0	4
Dengue virus infection	75	72	75	50	23
Japanese encephalitis	0	1	1	0	0
Kunjin virus infection	0	0	0	0	0
Malaria	2	6	8	8	4
Murray Valley encephalitis	0	0	0	0	2
Ross River virus infection	112	73	181	213	1,095
Zika virus	1	0	0	1	0
Zoonoses					
Anthrax	0	0	0	0	0
Australian bat lyssavirus	0	0	0	0	0
Brucellosis	0	0	0	1	0
Leptospirosis	0	1	2	2	3
Lyssavirus (NEC)	0	0	0	0	0
Ornithosis	1	0	0	1	0
Q Fever	12	9	17	10	9
Tularaemia	0	0	0	0	0
Grand Total:	25,140	18,659	12,389	14,004	15,053

APPENDIX B – SUMMARY OF OUTBREAKS REPORTED 2015

Foodborne Disease Investigations 2015

A foodborne **outbreak** is defined as an event where two or more people experience a similar illness after eating a common meal or food and epidemiological evidence indicates the meal or food as the source of the illness.

Salmonella subsp1 ser 4, 5, 12: i:- – Private residence – April

Three cases of *Salmonella* subsp 1 ser 4, 5, 12: i:- were reported in April. Interviews identified that cases had attended a work function at a private residence where pig and lamb were roasted on a spit. Grilled chicken was also served. There were reportedly three other people who were also unwell but were not tested. The source of the outbreak remains unknown, but previous outbreaks of this serovar have been associated with undercooked pork.

Salmonella Typhimurium phage type 9 – Restaurant – April

A report of an outbreak of gastroenteritis amongst guests at a hotel was received in April. Eight cases of *Salmonella* Typhimurium phage type 9 MLVA 03-24-11-10-523 were identified. All of the cases had eaten eggs from a buffet breakfast at the hotel on the same day. Food samples are routinely retained by the hotel and samples from the day of common exposure amongst the cases were tested. Scrambled eggs and cheese samples were positive for *Salmonella* Typhimurium phage type 9 MLVA 03-24-11-10-523.

Salmonella Typhimurium phage type 135a – Private residence – April

There was an increase in *Salmonella* Typhimurium phage type 135a notifications in April. Four cases had attended a party at a private residence in rural South Australia. All cases ate the same foods at the party including cold rice paper rolls with a sauce, but the source of the infection is unknown.

Salmonella Typhimurium phage type 108 – Private residence – May

A medical notification was received that mentioned multiple people were unwell with *Salmonella* following a family gathering in May. Further investigation identified nine out of 22 people unwell. Five people tested positive for *Salmonella* Typhimurium phage type 108. All of the food was prepared at home. Left over raw chicken and veal schnitzels were tested and both were positive for *Salmonella* Typhimurium phage type 108. The chicken and veal schnitzels were made at home using raw eggs, home-made bread crumbs and parmesan cheese.

Salmonella Typhimurium phage type 9 – Bakery – June

Thirty cases of *Salmonella* Typhimurium phage type 9 reported consuming Vietnamese rolls purchased from two bakeries owned by the same family. Ten additional people reported having gastroenteritis after eating at one of the bakeries, but were not tested. The rolls contained a raw egg butter and an environmental investigation identified multiple poor practices in relation to handling of the raw egg butter.

Salmonella Typhimurium phage type 9 – Hospital – July

A report was received from a hospital about two people who had tested positive for *Salmonella*. Investigations identified 36 people were unwell who had contact with the hospital, with 16 testing positive for *Salmonella* Typhimurium phage type 9 MLVA 03-24-12-10-523. A range of food and environmental samples were collected. Imported frozen fish samples were positive for *Salmonella* Matopeni and *Salmonella* Weltevreden. Uncooked, crumbed fish were positive for *Salmonella*

Typhimurium phage type 9 03-24-12-10-523 and internal components from a stab mixer used in the kitchen were also positive for *Salmonella* Typhimurium phage type 9 MLVA 03-24-12-10-523.

Salmonella Typhimurium phage type 9 – Take away – July

Two people with *Salmonella* Typhimurium phage type 9 and three with gastroenteritis (no testing done) had eaten egg-based crepes from the same take away shop. Environmental investigations at the premises did not identify any major issues.

Salmonella Typhimurium phage type 9 – Restaurant - October

Two cases of *Salmonella* Typhimurium phage type 9 MLVA 03-15-06-12-550 had eaten at a common café before becoming unwell. Both cases reported eating eggs at the café. An environmental inspection identified a chef had been off sick with gastroenteritis symptoms, but had not been tested. A second chef was identified as they had tested positive for *Salmonella* Typhimurium phage type 9. The source of the outbreak is unclear due to uncertainty around the illness onset for the first chef.

Salmonella Typhimurium phage type 135 – Takeaway – October

An increase in notifications for *Salmonella* Typhimurium phage type 135 was noted in October 2015. Six cases were linked to a kebab restaurant in metropolitan Adelaide. Cases consumed a variety of different foods with no specific common food item identified. The outbreak information was referred to local environmental health officers for investigation.

Salmonella Saintpaul – Community - December

On the 22nd December 2015, an increase in notifications for *Salmonella* Saintpaul was noted and an investigation commenced. Cases notified since 1 December 2015 to the time of writing this report have been included in the investigation. There was a sharp increase in cases in the reporting week beginning 10 April 2016. To date, there have been 281 confirmed cases, with interviews conducted with 246 (87.5%) cases. Of those cases interviewed, 96 (39%) reported eating mung bean sprouts in the 7-days prior to disease onset. Seventy-nine of 80 cases tested using whole genome sequencing had the outbreak sequence. *Salmonella* Saintpaul was identified in mung bean sprouts and a product recall was initiated on the 19th May. The investigation is continuing.

Vaccine Preventable Disease Investigations 2015

Meningococcal infection

There were two invasive meningococcal infection clusters identified in 2015, both were caused by *Neisseria meningitidis* serogroup B.

The first cluster was in April/May 2015, caused by *N. meningitidis* serogroup B. The cluster comprised two males and one female, all in their late teens. The Department for Health and Ageing identified two people who had social connections to all three cases who were then directed to receive clearance antibiotics. Genotyping was identical for two of the three cases, while the third was unable to be tested.

The second cluster was in July/August 2015, also caused by *N. meningitidis* serogroup B. The cluster comprised three males, all in their late teens. The Department for Health and Ageing identified one

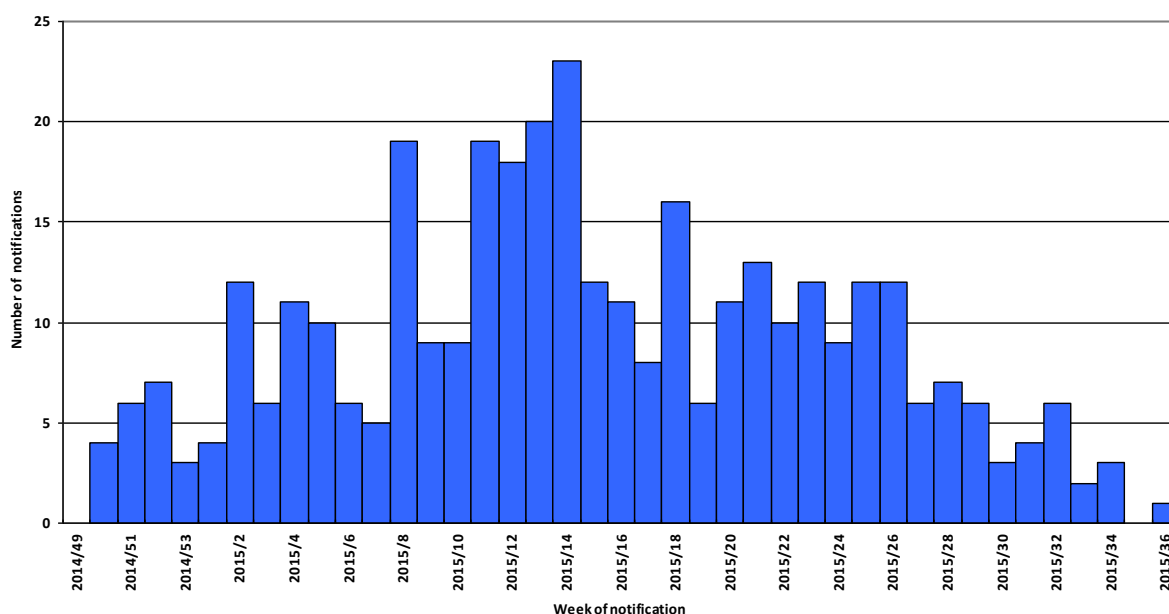
social contact who had connections to all three cases. Genotyping was identical for two of the three cases, while the third was unable to be tested

Other Infectious Disease Investigations 2015

Cryptosporidiosis

An outbreak investigation of cryptosporidiosis was initiated in December 2014. There were 361 notifications until the investigation was declared over on 1 September 2015. Interviews identified numerous risk factors predominantly with epidemiological links to swimming pool exposures. Implicated swimming pools were referred to Health Protection Programs for environmental investigation and decontamination where indicated. The introduction of nucleic acid testing, which is more sensitive at detecting *Cryptosporidium* infections than traditional methods, may have contributed to this increase.

Notified cases of Cryptosporidiosis in South Australia, 1-December 2014 to 1-September 2015, by week



Outbreaks Reported by Aged Care Facilities in 2015

Month reported	Agent identified	Number of facilities affected
January	Gastroenteritis, organism not detected	2
	Norovirus	3
February	Gastroenteritis, organism not detected	2
	Influenza	2
March	Gastroenteritis, organism not detected	2
	Norovirus	1
	Influenza	2
April	Gastroenteritis, organism not detected	6
	Influenza	7
May	Gastroenteritis, organism not detected	1
	Influenza	2
June	Gastroenteritis, organism not detected	2
	Rotavirus	1
	Influenza	1
July	Gastroenteritis, organism not detected	1
	Norovirus	2
	Influenza	7
August	Gastroenteritis, organism not detected	2
	Norovirus	7
	Rotavirus	2
	Influenza	14
September	Gastroenteritis, organism not detected	1
	Norovirus	12
	Influenza	15
October	Gastroenteritis, organism not detected	1
	Norovirus	7
	Influenza	5
November	Gastroenteritis, organism not detected	2
	Norovirus	9
	Influenza	1
December	Gastroenteritis, organism not detected	5
	Norovirus	7
	Rotavirus	1



For more information

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