Vaccine preventable and invasive diseases in Queensland

1 Jan – 30 Jun 2020

Quarterly surveillance report

This quarterly report provides additional data on vaccine preventable diseases notified in Queensland. This report covers the period 1 January to 30 June 2020. Data for this report were extracted from the Queensland Health notifiable conditions register on 29 July 2020 by onset date.

For current year to date totals, please refer to the Queensland Health Weekly Notifiable Conditions Report available here. Recent changes were made to the Queensland immunisation schedule, in line with changes to the national program, from 1 July 2020, at the end of the period covered in this report.

The current Queensland immunisation schedule is available online.

Summary

Table 1: Notifications of vaccine preventable diseases in Queensland by quarter 2020, and year-to-date, 2019–2020

Disease	Q1 2020	Q2 2020	YTD 2020	YTD 2019
Diphtheria	3	0	3	2
Group A Streptococcal infection (invasive)	84	61	145	154
Haemophilus influenzae type b (invasive)	1	1	2	3
Measles	6	0	6	16
Meningococcal (invasive)	14	3	17	19
Mumps	19	6	25	28
Pertussis	379	82	461	736
Pneumococcal (invasive)	57	35	92	144
Rotavirus	160	36	196	389
Rubella	0	0	0	3
Tetanus	0	1	1	0
Varicella	2,558	2,246	4,804	4,630

(Q1: 1 January – 31 March; Q2: 1 April – 30 June)

Diphtheria – There were no notifications in Q2 2020.

Invasive *Haemophilus influenzae* type b (Hib) disease – There was one notification of invasive Hib disease from the Central Queensland HHS in Q2 2020 in a fully vaccinated (three doses), one year old Aboriginal child.

Measles – There were no notifications of measles in Q2 2020.

Mumps – There were six notifications of mumps received in Q2 2020, with cases aged from 20 years to 71 years. Of the six notifications, two were partially or fully vaccinated, three were unvaccinated, and one had an unknown vaccination status. Indigenous status was available for all cases, and all cases were non-Indigenous people.

Rubella – There were no notifications in Q2 2020.

Tetanus – There was one notification of tetanus from the Sunshine Coast HHS in Q2 2020 in an unvaccinated 75-year-old.

Invasive group A streptococcal infection

There were 61 notifications of invasive group A streptococcal (iGAS) infection in Q2 2020, with three deaths reported. The majority of cases (93%) were adults aged 20 years or older. Of the three deaths, two deaths occurred in adults aged 96 years or older, and one death in adult aged 21-year-old. Indigenous status was available for 60 (98%) cases, of these 15 (25%) were Aboriginal and/or Torres Strait Islander people.

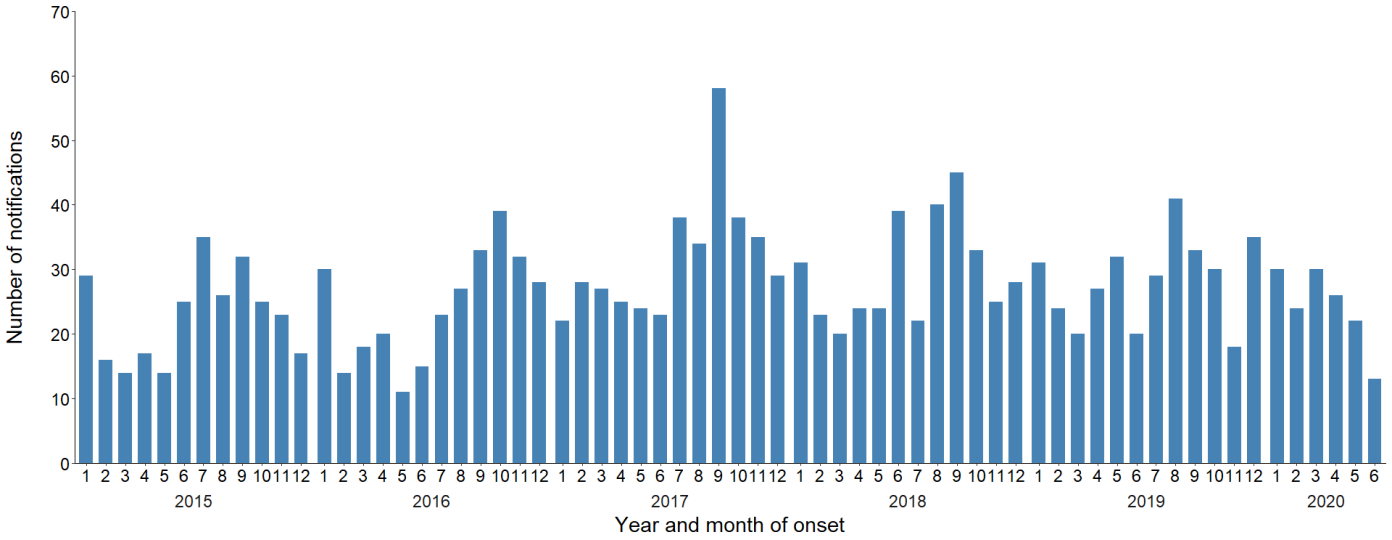

Figure 1: Notifications of invasive group A streptococcal infection in Queensland by year and month of onset, 1 January 2015 to 30 June 2020

Table 2: Notifications of invasive group A streptococcal infection in Queensland by age group and quarter, 2020 and year-to-date, 2019–2020

Age Group (years)	Q1 2020	Q2 2020	YTD 2020	YTD 2019
0–4	10	3	13	9
5–9	1	0	1	1
10–14	1	0	1	3
15–19	3	1	4	3
20–24	2	4	6	6
25–44	17	12	29	38
45–64	24	16	40	46
65+	26	25	51	48
Total	**84**	**61**	**145**	**154**

Invasive meningococcal disease

There were three notifications of invasive meningococcal disease (IMD) in Q2 2020, with no deaths reported. Of these, two cases were serogroup B and one case was serogroup W. Serogroups W and Y are still occurring in Queensland following their emergence in 2016 (Figure 2).

Vaccination History

In Queensland:

- Vaccines for serogroup C disease were introduced for children 12 months of age in 2003, with an initial catch-up period covering older ages to <20 years.

- In response to the rise in serogroup W and serogroup Y disease in 2016, a meningococcal ACWY vaccination program was introduced in July 2017 to provide vaccination to year 10 students through the school immunisation program, and for young people aged 15–19 years of age through their immunisation provider.

- From 1 July 2018, conjugate meningococcal ACWY vaccine replaced Menitorix (Hib-Meningococcal Serogroup C vaccine) at the 12-month time point on the national immunisation program schedule.

- From 1 July 2020, the meningococcal B vaccine (Bexsero®) is available for Aboriginal and Torres Strait Islander infants at 2, 4, and 12 months of age.

- From 1 July 2020, Bexsero and conjugate meningococcal ACWY vaccines will also be available for people of all ages with specified medical risk conditions that increase their risk of IMD.

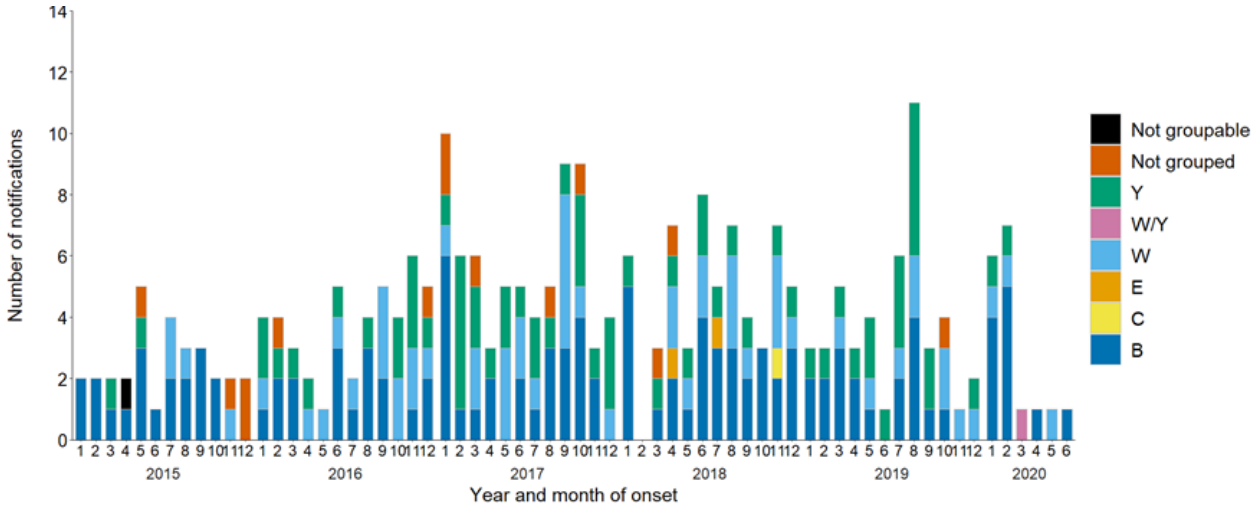

Figure 2: Notifications of invasive meningococcal disease in Queensland by year and month of onset, 1 January 2015 to 30 June 2020

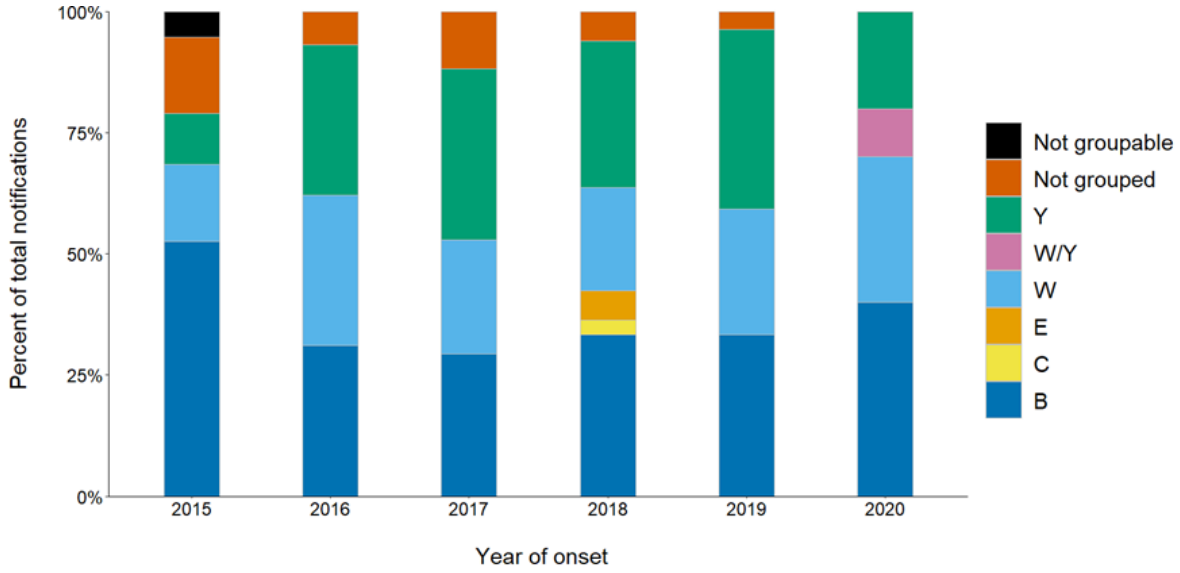

Figure 3: Notifications of invasive meningococcal disease in Queensland by year and serogroup, 1 January 2015 to 30 June 2020

Table 3: Notifications of invasive meningococcal infection in Queensland by serogroup and age group, 1 January to 30 June 2020

Age Group (years)	Group B	Group C	Group E	Group W	Group W/Y	Group Y	Not groupable	Not grouped	Total
0–4	5	0	0	0	0	0	0	0	5
5–9	0	0	0	0	0	0	0	0	**0**
10–14	0	0	0	0	0	0	0	0	**0**
15–19	2	0	0	0	0	0	0	0	**2**
20–24	1	0	0	0	0	0	0	0	**1**
25+	3	0	0	3	1	2	0	0	9
Total	**11**	**0**	**0**	**3**	**1**	**2**	**0**	**0**	**17**

Invasive pneumococcal disease

There were 35 invasive pneumococcal disease (IPD) notifications in Q2 2020, with three deaths reported. Of the three deaths, two deaths occurred in adults aged 75 years or older, and one death in a child aged younger than 6 months. Figure 4 shows the number of notifications of IPD by year and month of onset. The serotype of each notification is categorised according to vaccine type: serotypes included in the 7-valent vaccine (Prevenar) are categorised as 7v, those included exclusively in the 13-valent vaccine (Prevenar 13) are categorised as 13v-7v.

Vaccination History

Queensland has been using

- Prevenar 13® (13vPCV) vaccine in a 3-dose primary course schedule for infants not in a high-risk category at 6 weeks, 4, and 6 months of age since 1 July 2011. From 1 July 2018, a new schedule for 13vPCV was introduced, with doses at 6 weeks, 4 months, and 12 months of age.
- From 1 July 2018, Aboriginal and/or Torres Strait Islander children and medically at-risk children are scheduled to receive Prevenar 13 at 6 weeks, 4 months, 6 months, and 12 months of age.

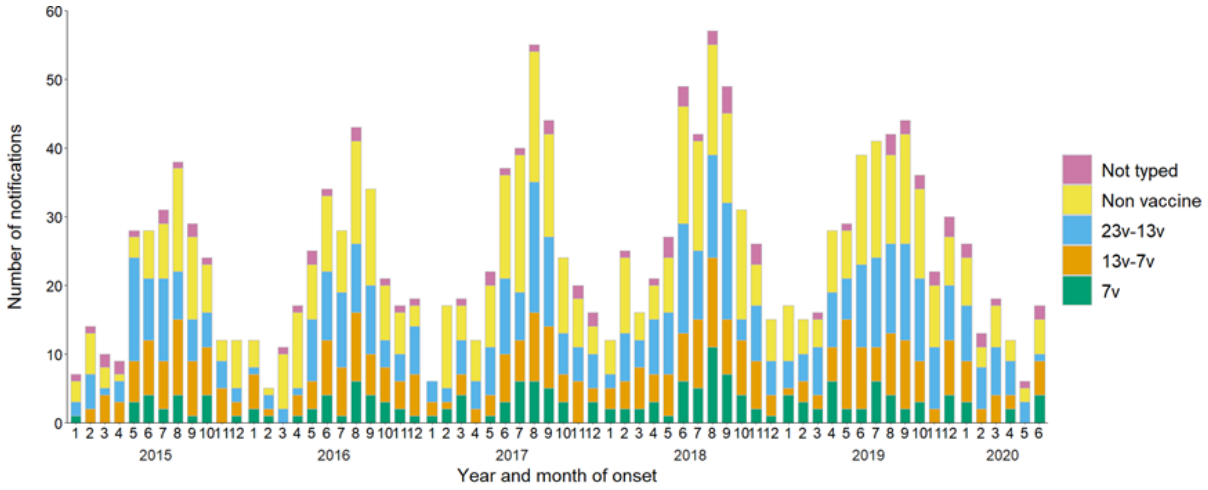

Figure 4: Notifications of invasive pneumococcal disease in Queensland by year and month of onset, 1 January 2015 to 30 June 2020

Figure 5 shows the number of notifications of 7v serotypes of IPD in Queensland by year and quarter of onset, 1 January 2015 to 30 June 2020.

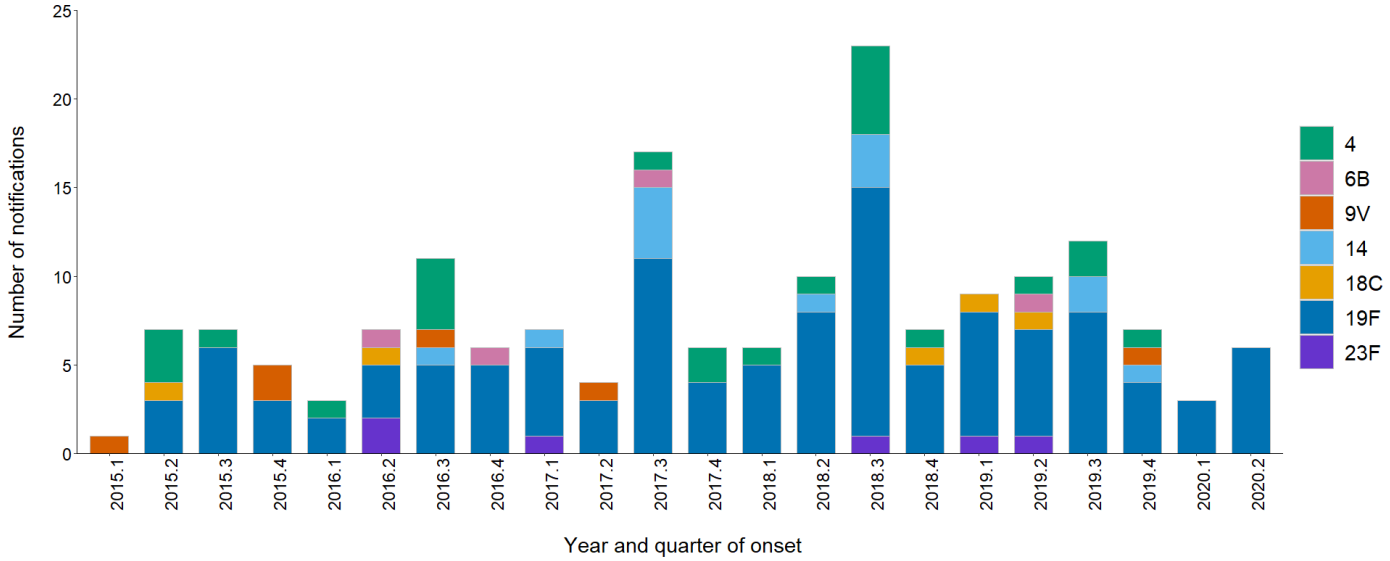

Figure 5: Notifications of 7v serotypes of invasive pneumococcal disease in Queensland by year and quarter of onset, 1 January 2015 to 30 June 2020.

Figure 6 shows the number of notifications of 13v-7v serotypes of IPD in Queensland by year and quarter of onset, 1 January 2015 to 30 June 2020.

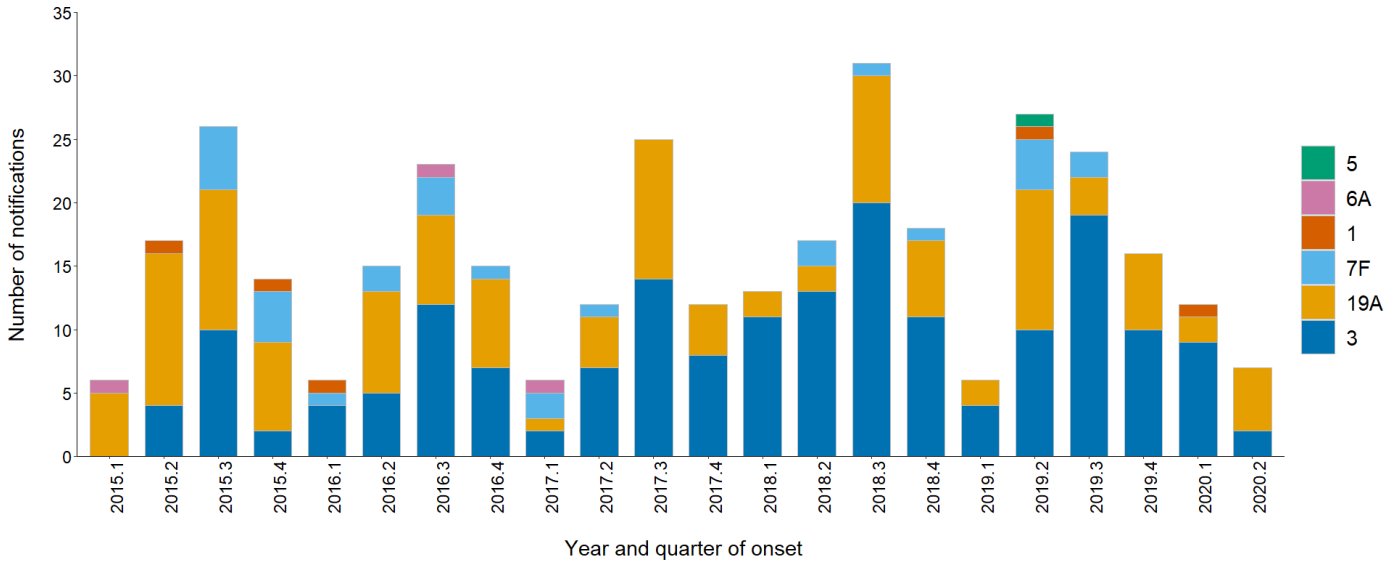

Figure 6: Notifications of 13v-7v serotypes of invasive pneumococcal disease in Queensland by year and quarter of onset, 1 January 2015 to 30 June 2020

Figure 7 shows the number of notifications of 23v-13v serotypes of IPD in Queensland by year and quarter of onset, 1 January 2015 to 30 June 2020.

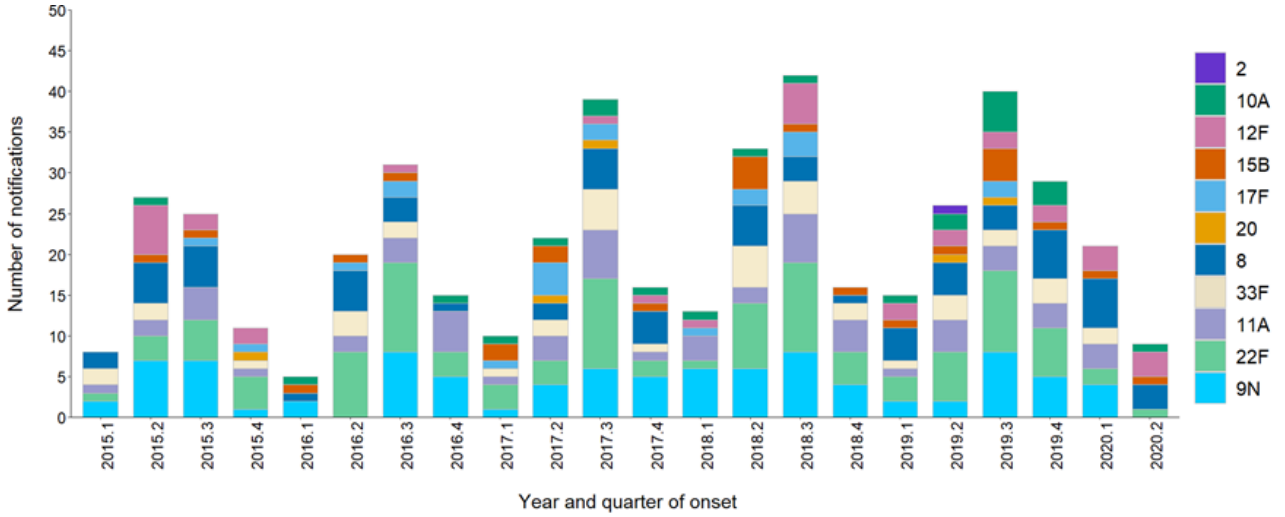

Figure 7: Notifications of 23v-13v serotypes of invasive pneumococcal disease in Queensland by year and quarter of onset, 1 January 2015 to 30 June 2020

In Q2 2020, the most commonly notified IPD serotypes were 3, 19F, 8, 19A, 23B, 12F, 15C, and 22F accounting for 71% of all IPD notifications in the time period.

Table 4: Most common serotypes of invasive pneumococcal disease notified in Queensland by quarter, 2020 and year-to-date, 2019–2020

Serotype	Vaccine inclusion	Q1 2020	Q2 2020	YTD 2020	YTD 2019
3	13v-7v	9	2	11	14
19F	7v	3	6	9	13
8	23v-13v	6	3	9	8
19A	13v-7v	2	5	7	13
23B	Non vaccine	4	3	7	9
12F	23v-13v	3	3	6	4
15C	Non vaccine	2	2	4	4
22F	23v-13v	2	1	3	9

Table 5: Notifications and rates of invasive pneumococcal disease in Queensland by age group and quarter, 2020 and year-to-date, 2019–2020

Age Group (years)	Number of notifications				Notification Rate[#]	
	Q1 2020	Q2 2020	YTD 2020	YTD 2019	YTD 2020	YTD 2019
<1	1	1	2	6	6.5	19.6
1–4	5	4	9	15	7.1	11.8
5–14	4	3	7	3	2.1	0.9
15–24	5	3	8	9	2.5	2.8
25–44	8	8	16	30	2.4	4.4
45–64	15	8	23	35	3.8	5.7
65+	19	8	27	46	7.1	12
Total	**57**	**35**	**92**	**144**	**3.7**	**5.8**

[#] Annual age specific rate per 100,000 population per year using ERP for 2018 and 2019 (ABS Catalogue no. 3218.0)

Pertussis

There were 82 notifications of pertussis in Q2 2020 with no deaths reported. The highest rate of notifications was seen in the 5–9 year age group (Table 6).

Vaccination History

- Acellular vaccines were first used on the NIP for all Australian children in the late 1990s.
- Queensland has offered children Infanrix hexa in a 3-dose schedule for infants at 6 weeks, 4 months, and 6 months of age since 1 March 2008.
- Booster doses of pertussis-containing vaccine (DTPa) are scheduled for children at 18 months and 4 years of age.
- A pertussis-containing booster (dTpa) is offered in the year 7 school vaccination program.
- A dose of pertussis-containing vaccine (dTa) is recommended during every pregnancy (ideally between 20 and 32 weeks).

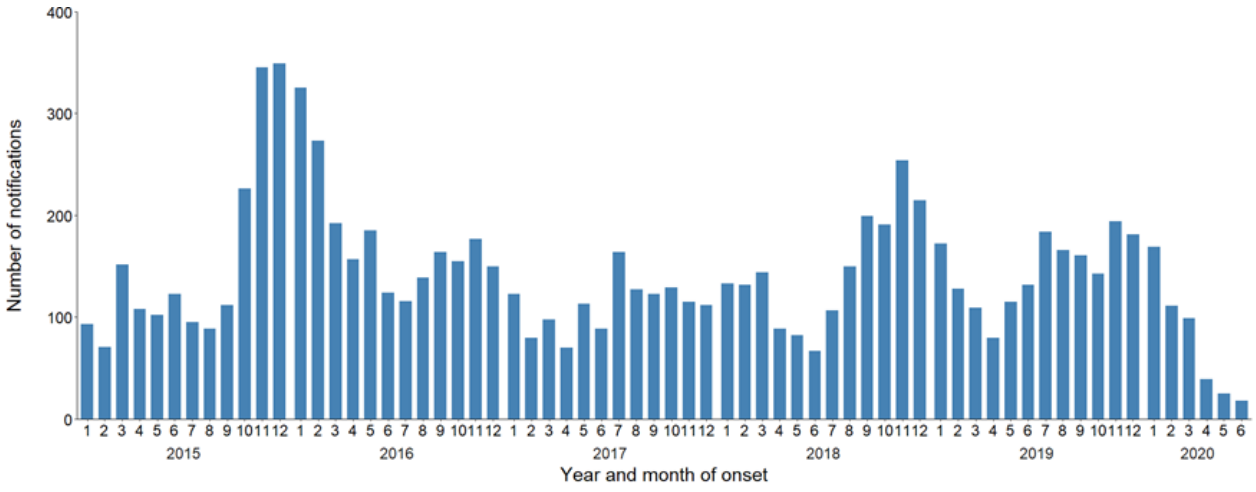

Figure 8: Notifications of pertussis in Queensland by month and year of onset, 1 January 2015 to 30 June 2020

Table 6: Number and rate of pertussis notifications in Queensland by age group and quarter, 2020 and year-to-date, 2019–2020

Age Group (years)	Number of notifications				Notification Rate[#]	
	Q1 2020	Q2 2020	YTD 2020	YTD 2019	YTD 2020	YTD 2019
<1	3	4	7	32	22.8	104.3
1–2	11	2	13	33	20.8	52.8
3–4	13	3	16	36	24.9	55.9
5–9	82	17	99	187	59.4	112.1
10–14	61	11	72	122	44.5	75.4
15–19	38	4	42	49	27.1	31.6
20–49	100	22	122	164	12	16.1
50–64	41	13	54	69	12.2	15.6
65+	30	6	36	44	9.4	11.5
Total	**379**	**82**	**461**	**736**	**18.6**	**29.6**

[#] Annual age specific rate per 100,000 population per year using ERP for 2018 and 2019 (ABS Catalogue no. 3218.0)

Table 7: Notifications of pertussis in Queensland in children aged younger than one year by quarter, 2020 and year-to-date, 2019–2020

Age Group	Q1 2020	Q2 2020	YTD 2020	YTD 2019
<1 month	0	1	1	3
1 month	0	0	0	1
2 months	0	0	0	4
3 months	0	0	0	1
4 months	0	1	1	3
5 months	1	0	1	1
6 months	1	0	1	2
7 months	0	1	1	4
8 months	0	0	0	3
9 months	0	1	1	5
10 months	0	0	0	3
11 months	1	0	1	2
Total	**3**	**4**	**7**	**32**

Table 8: Maternal vaccination status for mother of pertussis cases reported in Queensland in children aged younger than one year by quarter, 2020 and year-to-date, 2019–2020

Maternal vaccination status	Q1 2020	Q2 2020	YTD 2020	YTD 2019
Vaccinated	1	3	4	13
Not Vaccinated	2	1	3	15
Not asked	-	-	-	1
Unknown	-	-	-	3
Total	**3**	**4**	**7**	**32**

Rotavirus

There were 36 notifications of rotavirus in Q2 2020. The highest number and rate of notification was seen in children younger than 1 year of age. Figure 9 shows the notifications of rotavirus in Queensland by age group and quarter and year of onset.

Towards the end of 2015 there was an increase in notifications in children aged younger than one year, which has been sustained. At the end of 2015, two laboratories in Queensland introduced PCR testing for rotavirus infection. PCR is more sensitive for rotavirus detection than antigen detection methods. Further, with current PCR assays, discrimination between wild type rotavirus and the vaccine strains is not possible. Notified cases in this age group may reflect recent vaccination rather than infection.

During 2006–2016, only confirmed rotavirus cases were notified as per the Queensland health guidelines. Queensland introduced a case definition for probable and confirmed cases from the beginning of 2017.

Vaccination History

Vaccines for rotavirus first became available in Australia in early 2006 and were added to the National Immunisation Program from 1 July 2007. At this time, Queensland began vaccinating children with RotaTeq (Merck/Seqirus) in a 3-dose schedule administered orally at 6 weeks, 4 months, and 6 months of age.

From 1 July 2017, oral rotavirus vaccine Rotarix (GSK) given in a 2-dose schedule (6 weeks, 4 months), replaced RotaTeq in Queensland.

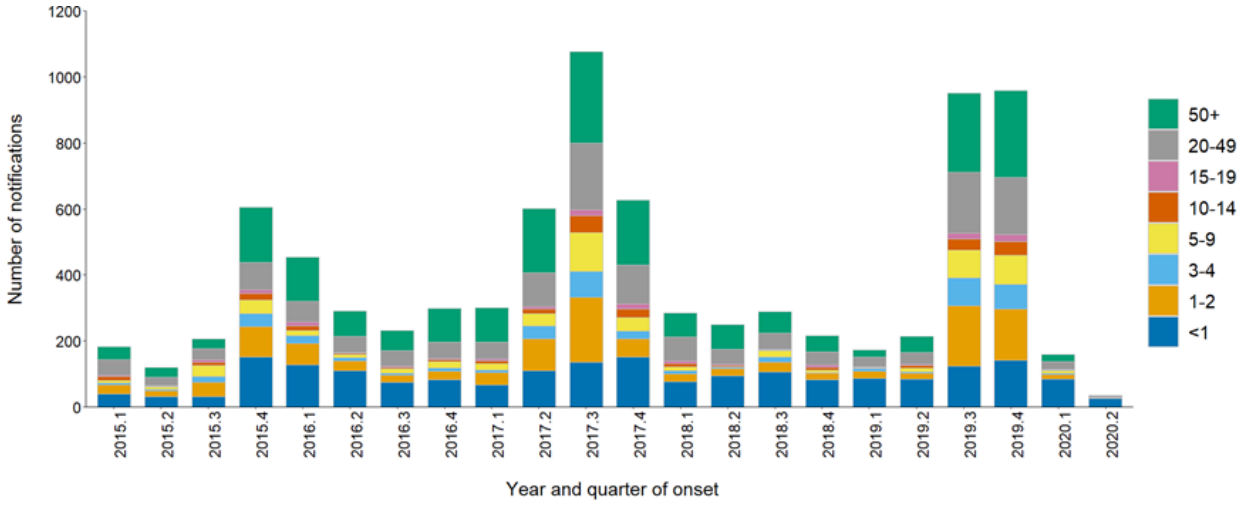

Figure 9: Notifications of rotavirus in Queensland by age group and quarter and year of onset, 1 January 2015 to 30 June 2020

Table 9: Number and rate of rotavirus notifications in Queensland by age group and quarter, 2020 and year-to-date, 2019–2020

Age Group (years)	Number of notifications				Notification Rate[#]	
	Q1 2020	Q2 2020	YTD 2020	YTD 2019	YTD 2020	YTD 2019
<1	85	27	112	172	365.1	560.7
1–2	13	0	13	38	20.8	60.8
3–4	4	1	5	12	7.8	18.6
5–9	8	0	8	15	4.8	9.0
10–14	2	1	3	11	1.9	6.8
15–19	3	1	4	5	2.6	3.2
20–49	23	3	26	64	2.6	6.3
50+	22	3	25	72	3.0	8.7
Total	160	36	196	389	7.9	15.7

[#] Annual age specific rate per 100,000 population per year using ERP for 2018 and 2019 (ABS Catalogue no. 3218.0)

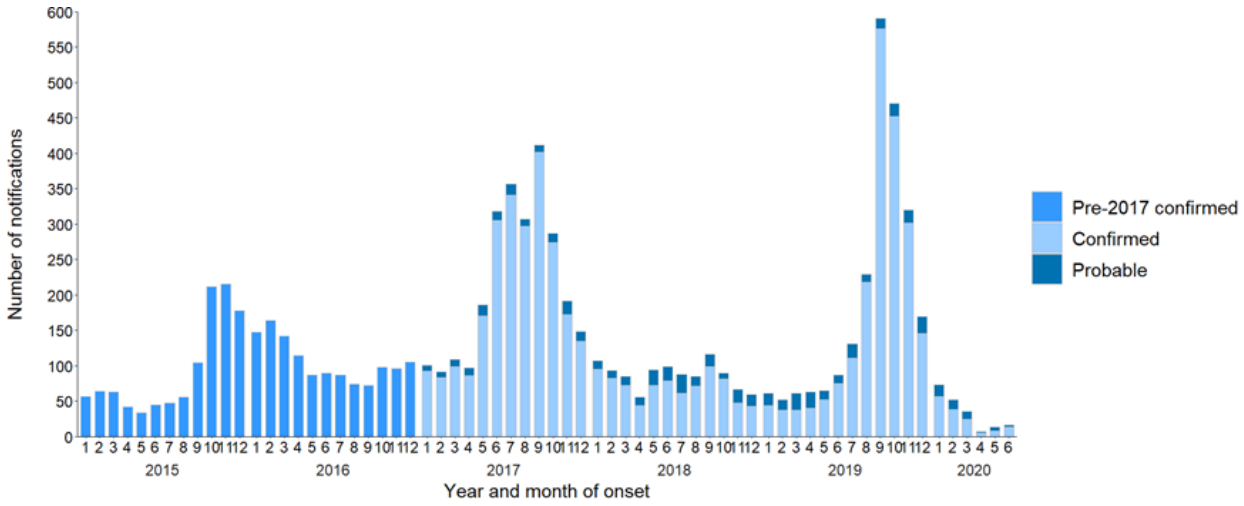

Figure 10: Notifications of rotavirus in Queensland by month and year of onset, 1 January 2015 to 30 June 2020

Table 10: Notifications of rotavirus in Queensland in children aged younger than one year by quarter, 2020 and year-to-date, 2019–2020

Age Group	Q1 2020	Q2 2020	YTD 2020	YTD 2019
<1 month	1	0	1	0
1 month	19	5	24	38
2 months	29	10	39	53
3 months	13	8	21	19
4 months	8	4	12	27
5 months	7	0	7	16
6 months	2	0	2	5
7 months	1	0	1	4
8 months	0	0	0	0
9 months	1	0	1	4
10 months	1	0	1	3
11 months	3	0	3	3
Total	**85**	**27**	**112**	**172**

Varicella-zoster virus infection

There were 2,246 notifications of varicella-zoster infection in Q2 2020. From 1 January 2018, all notifications of varicella-zoster virus infection in children aged younger than 10 years, and adults aged 60 years or older have been followed up to determine if the clinical presentation is consistent with chickenpox or shingles. Prior to this time, only children younger than eight years of age were followed up. A time limited (1 Dec 2017–30 Sep 2018) intermittent enhanced surveillance (all notifications followed up for one month in each quarter) of all varicella notifications also commenced in December 2017. From 1 August 2019, all notifications of varicella-zoster virus infection have been followed up to determine the clinical presentation is consistent with chickenpox or shingles.

Vaccination History

The National Shingles Vaccination Program commenced in November 2016 for adults 70 years of age, with a single catch-up dose funded for adults aged 71 to 79 years until 2021. The National Immunisation Program Schedule provides a combined measles, mumps, rubella, and varicella (MMRV) vaccine for children aged 18 months.

Table 11: Notifications of varicella in Queensland by age group and clinical presentation, Q1 2020 and Q2 2020

Age Group (years)	Q1 2020				Q2 2020			
	Chickenpox	Shingles	Unspecified	Total	Chickenpox	Shingles	Unspecified	Total
<1	11	1	2	14	8	0	0	8
1–2	9	0	5	14	10	2	8	20
3–4	14	6	3	23	7	4	9	20
5–7	43	6	11	60	18	5	9	32
8–9	27	12	5	44	9	4	9	22
10–59	162	1,132	206	1,500	71	757	455	1,283
60–69	9	396	64	469	7	268	148	423
70+	5	345	84	434	4	275	159	438
Total	**280**	**1,898**	**380**	**2,558**	**134**	**1,315**	**797**	**2,246**

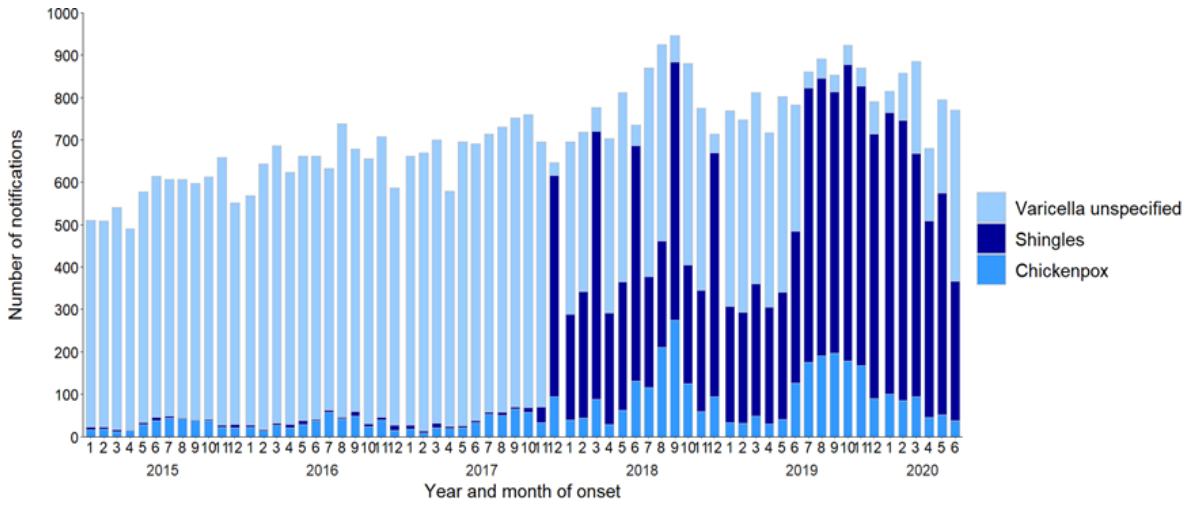

Figure 11: Notifications of varicella in Queensland by clinical presentation, 1 January 2015 to 30 June 2020

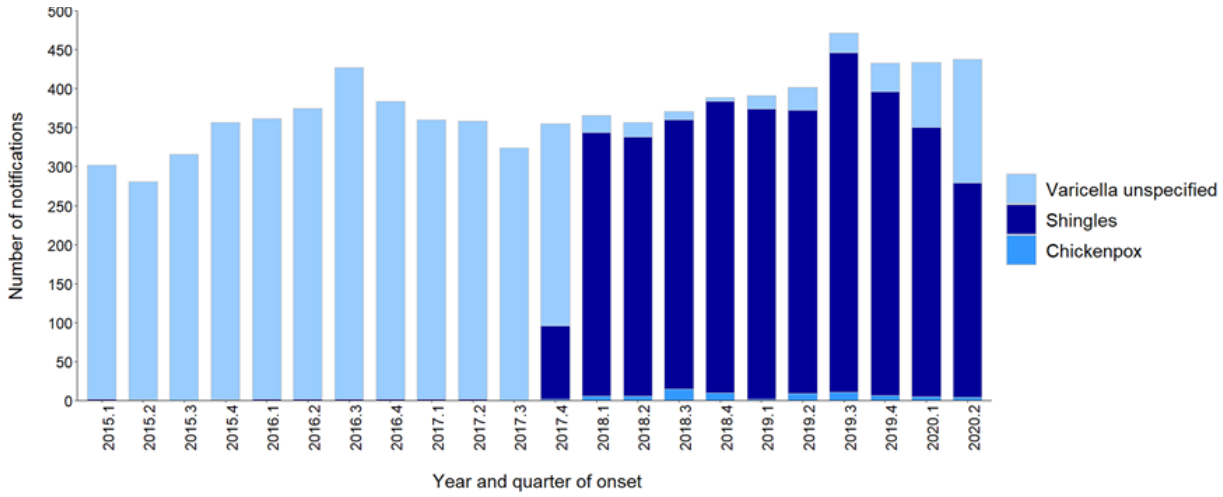

Figure 12: Notifications of varicella in Queensland by clinical presentation for people 70 years of age or older, 1 January 2015 to 30 June 2020

Technical notes

1. Notifications recorded in NOCS may change over time as it is a live database.
2. Case definitions for the reported diseases are available at: http://disease-control.health.qld.gov.au/
3. Historical vaccination data and immunisation policies are available from the National Centre for Immunisation Research and Surveillance (NCIRS) at: http://www.ncirs.edu.au/provider-resources/vaccination-history/