

Vaccine preventable and invasive diseases in Queensland

1 Jan–31 Dec 2021



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Quarterly Surveillance Report

This quarterly report provides additional data on vaccine preventable diseases notified in Queensland. This report covers the period 1 January to 31 December 2021. Data for this report were extracted from the Queensland Health notifiable conditions register on 07 February 2022 by episode 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 beginning of the period covered in this report.

The current Queensland immunisation schedule is available online for any questions regarding vaccine recommendations.

Summary

Table 1: Notification of vaccine preventable diseases in Queensland by quarter 2021, and 2020-2021.

Disease	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total 2021	Total 2020
Diphtheria	0	1	3	0	4	8
Group A Streptococcal infection (invasive)	60	65	72	81	278	279
<i>Haemophilus influenzae type b</i> (invasive)	1	1	0	2	4	6
Measles	0	0	0	0	0	6
Meningococcal (invasive)	4	3	3	4	14	27
Mumps	3	0	1	2	6	34
Pertussis	24	21	18	36	99	490
Pneumococcal (invasive)	36	83	90	50	259	216
Rotavirus	91	98	126	286	601	309
Rubella	0	0	0	0	0	0
Tetanus	0	0	0	0	0	5
Varicella	2,567	2,381	2,615	2,755	10,318	10,139

(Q1: 1 January–31 March, Q2: 1 April–30 June, Q3: 1 July–30 September, Q4: 1 October–31 December)

Diphtheria

There were no notifications in quarter 4 2021 (Q4 2021).

In 2021, there were 2 notifications of cutaneous toxigenic *C. diphtheriae*, one each from the Cairns and Hinterland and Torres and Cape HHS areas (ages 30 and 11 years, respectively), and two cutaneous toxigenic *C. ulcerans* notifications from the Townsville HHS area (ages 23 and 67 years). The 4 cases acquired their infection in Queensland and were fully vaccinated.

Invasive Haemophilus influenzae type b (Hib) disease

There were 2 notifications of Hib from the Metro South HHS area in Q4 2021 in adults aged 42 and 59 years.

The 4 notifications of Hib in 2021 were aged 9 months, 42, 59, and 86 years. Of the 4 cases, 1 child was fully vaccinated for age, and 3 adults were unvaccinated.

Measles

There were no notifications of measles in 2021.

Mumps

There were 2 notifications of mumps from the Gold Coast and Metro South HHS areas in Q4 2021 in unvaccinated, non-Indigenous adults, with ages 54 and 61 years.

In 2021, there were 6 mumps cases notified in Queensland, of which 2 were children (aged 6 and 9 years) and 4 were adults (aged 54, 61, 64, and 71 years). Of these cases, 2 children were fully vaccinated, and 4 adults were unvaccinated. All 6 cases were non-Indigenous people. The 2021 notifications of mumps were 82 per cent lower than the notifications of 2020.

Rubella

There were no notifications of rubella in 2021.

Tetanus

There were no notifications of tetanus in 2021.

Invasive group A streptococcal infection

There were 81 notifications of invasive group A streptococcal (iGAS) infection in Q4 2021, with 2 deaths reported. From 1 January to 31 December 2021, there were 278 notifications of iGAS infection in Queensland, including 8 reported deaths. The majority of cases (78 per cent) were adults aged 20 years or older. Of the 8 deaths, 6 deaths occurred in adults aged 20 years or older and 2 deaths in children younger than 5 years of age. Indigenous status was available for 276 (99 per cent) reported cases. Of these, 104 (37 per cent) of cases occurred in Aboriginal and/or Torres Strait Islander people.

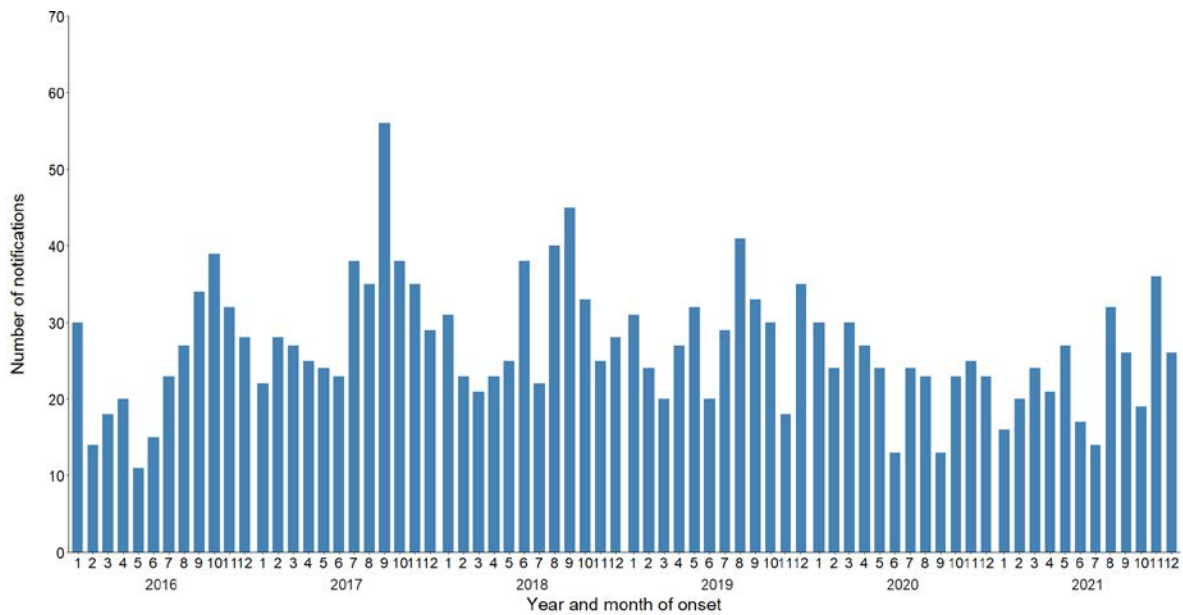


Figure 1: Notifications of invasive group A streptococcal infection in Queensland by year and month of onset, 1 January 2016 to 31 December 2021

Table 2: Notifications of invasive group A streptococcal infection in Queensland by age group in years and quarter, 2021 and 2020-2021

Age Group	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total 2021	Total 2020
0-4	3	8	12	11	34	24
5-9	2	3	3	4	12	5
10-14	1	1	0	4	6	3
15-19	5	1	2	2	10	9
20-24	0	1	1	1	3	11
25-44	13	19	17	17	66	59
45-64	18	12	15	20	65	83
65+	18	20	22	22	82	85
Total	60	65	72	81	278	279

Invasive meningococcal disease

There were 4 notifications of invasive meningococcal disease (IMD) in Q4 2021, with no deaths reported. Of these, 2 cases were serogroup B, 1 case was W, and 1 case was serogroup Y.

During 2021, there were a total of 14 notifications of IMD, with no deaths reported. Of the 14 notifications, 6 cases were serogroup Y, 5 cases were serogroup B, and 3 cases were serogroup W. The 2021 notifications of IMD were 48 per cent lower than the notifications of 2020 (27 cases). 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®) became available and was funded 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 were made available and funded for people of all ages with specified medical conditions that increase their risk of IMD.

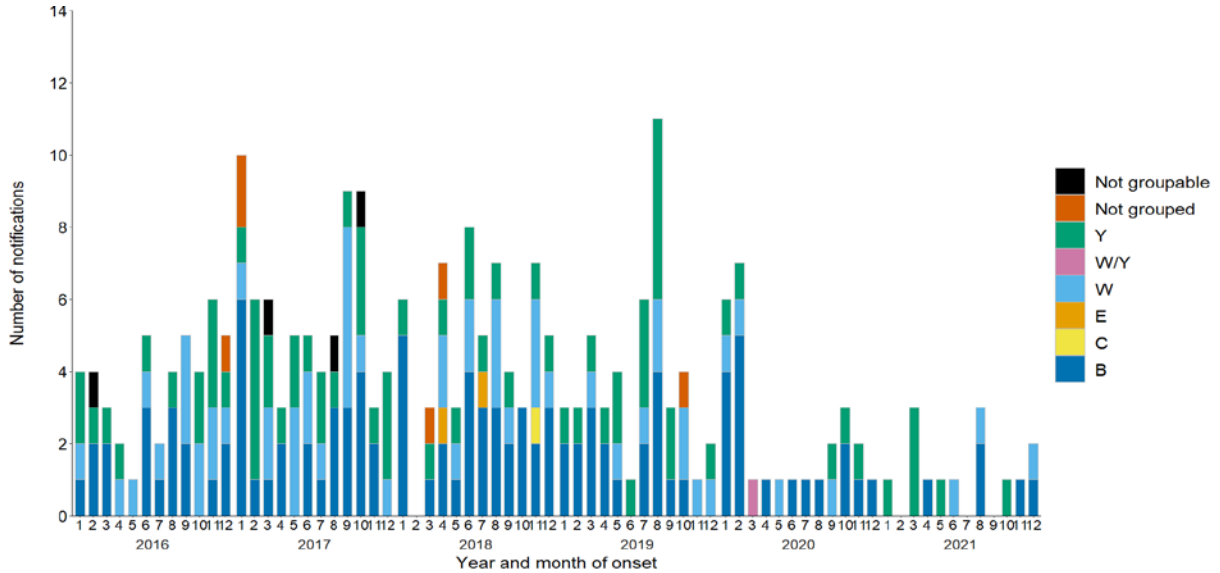


Figure 2: Notifications of invasive meningococcal disease in Queensland by year and month of onset, 1 January 2016 to 31 December 2021

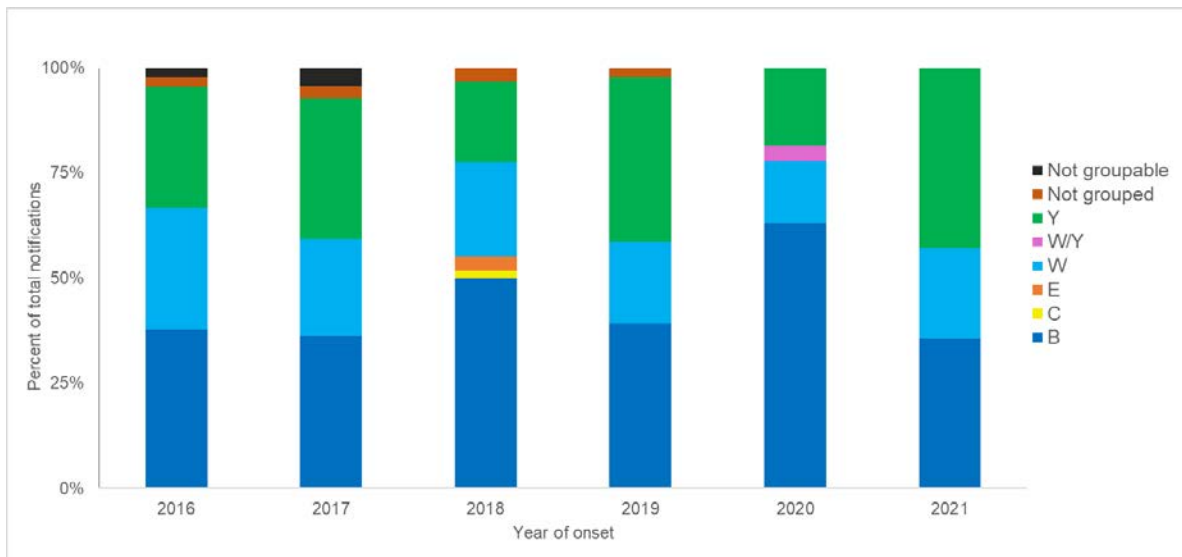


Figure 3: Notifications of invasive meningococcal disease in Queensland by year and serogroup, 1 January 2016 to 31 December 2021

Table 3: Notifications of invasive meningococcal infection in Queensland by serogroup and age group in years, 1 January to 31 December 2021

Age Group	Group B	Group W	Group Y	Not groupable	Not grouped	Total
0–4	1	2	0	0	0	3
5–9	0	1	0	0	0	1
10–14	0	0	0	0	0	0
15–19	3	0	0	0	0	3
20–24	0	0	0	0	0	0
25+	1	0	6	0	0	7
Total	5	3	6	0	0	14

Invasive pneumococcal disease

There were 50 invasive pneumococcal disease (IPD) notifications in Q4 2021, with 1 death reported in a child aged 14 years. During 2021, there were 259 notifications of IPD, and 8 deaths reported. Of these 8 deaths, 4 were in adults aged 27 years or older, 1 was a child aged 14 years, and 2 were in children younger than 5 years of age. 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

In Queensland:

- Since 1 July 2011, 13vPCV vaccine was provided in a 3-dose primary course schedule for infants not in a high-risk category at 6 weeks, 4, and 6 months. 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.

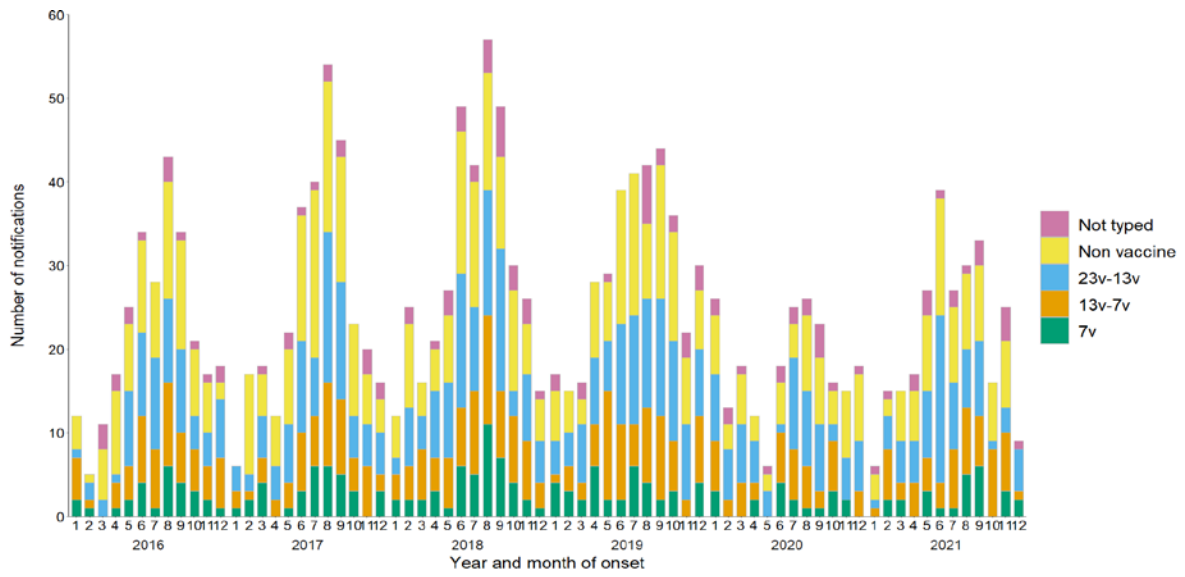


Figure 4: Notifications of invasive pneumococcal disease in Queensland by year and month of onset, 1 January 2016 to 31 December 2021

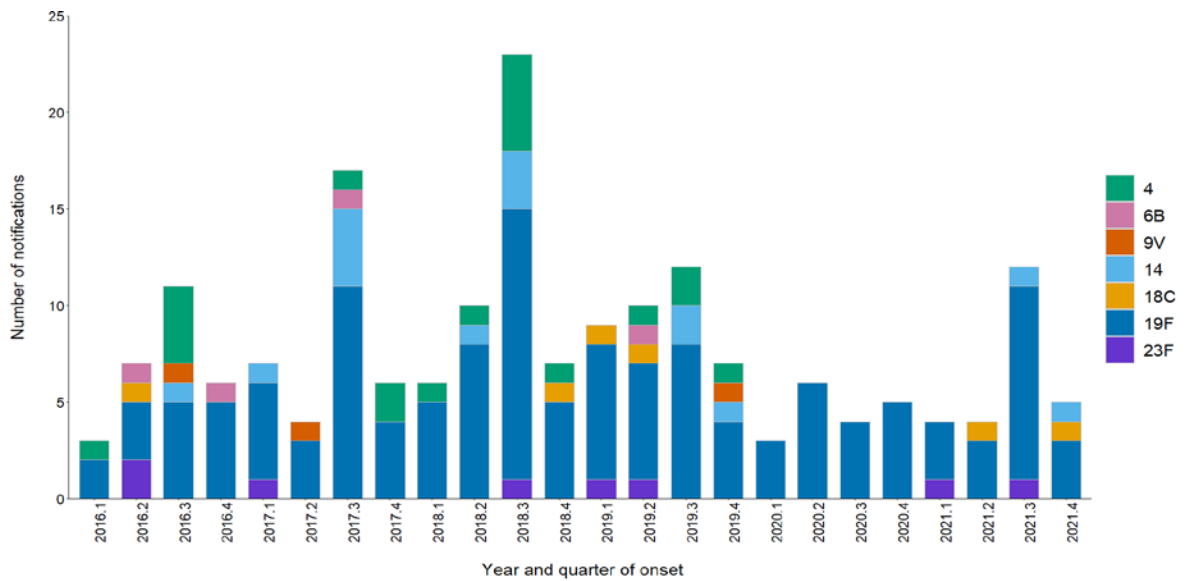


Figure 5: Notifications of 7v serotypes of invasive pneumococcal disease in Queensland by year and quarter of onset, 1 January 2016 to 31 December 2021

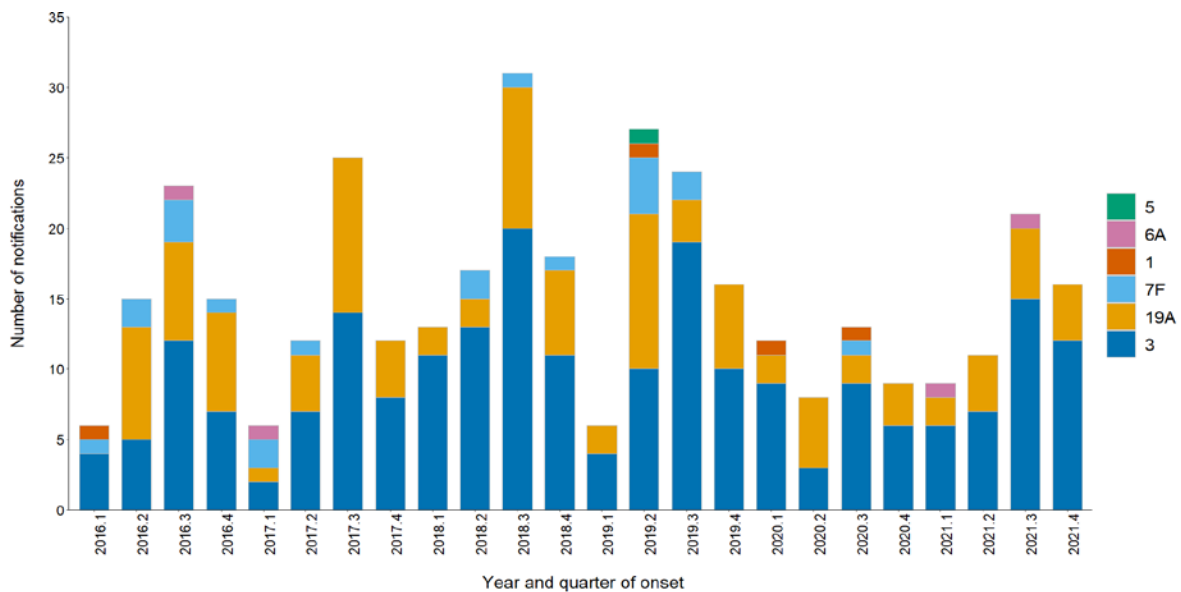


Figure 6: Notifications of 13v-7v serotypes of invasive pneumococcal disease in Queensland by year and quarter of onset, 1 January 2016 to 31 December 2021

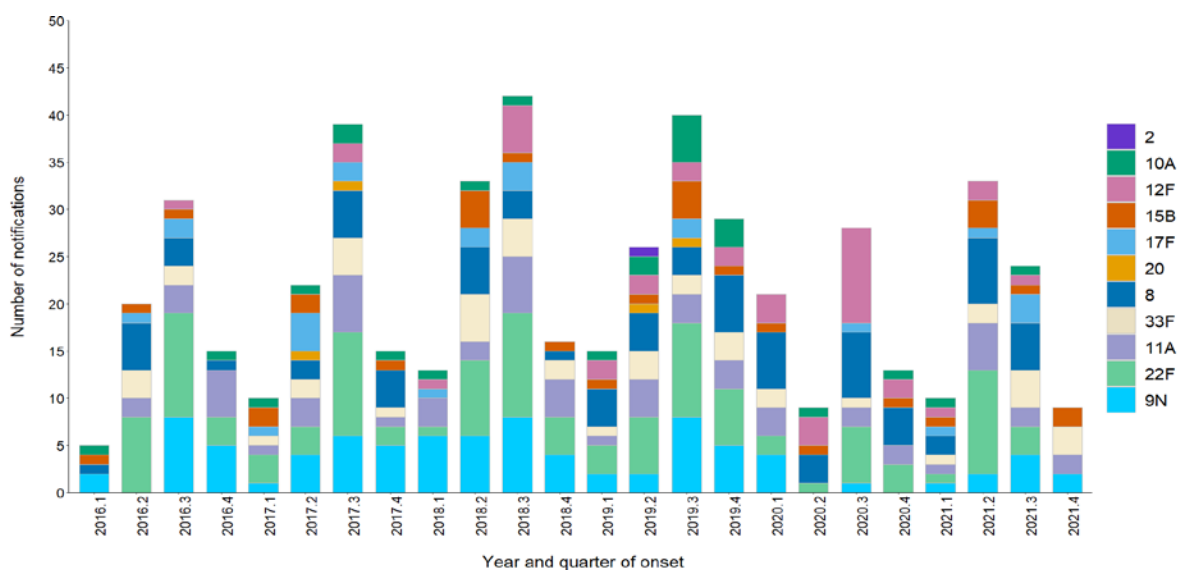


Figure 7: Notifications of 23v-13v serotypes of invasive pneumococcal disease in Queensland by year and quarter of onset, 1 January 2016 to 31 December 2021

In 2021, the most commonly notified IPD serotypes were 3, 19F, 23B, 19A, 22F, 8, 6C, 11A, 33F, 16F, 9N, 15B, 15C, and 23A accounting for 73% of all IPD notifications in the time period.

Table 4: Most common serotypes of invasive pneumococcal disease in Queensland by quarter, 2021 and 2020-2021

Serotype	Vaccine inclusion	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total 2021	Total 2020
3	13v-7v	6	7	15	12	40	27
19F	7v	3	3	10	3	19	18
23B	Non vaccine	2	7	6	2	17	20
19A	13v-7v	2	4	5	4	15	12
22F	23v-13v	1	11	3	0	15	12
8	23v-13v	2	7	5	0	14	20
6C	Non vaccine	1	5	5	2	13	7
11A	23v-13v	1	5	2	2	10	7
33F	23v-13v	1	2	4	3	10	3
16F	Non vaccine	3	3	1	2	9	5
9N	23v-13v	1	2	4	2	9	5
15B	23v-13v	1	3	1	2	7	3
15C	Non vaccine	0	3	1	2	6	6
23A	Non vaccine	0	3	2	1	6	6

Table 5: Notifications and rates of invasive pneumococcal disease in Queensland by age group in years and quarter, 2021 and 2020-2021

Pneumococcal Age Group	Number of notifications						Notification rate#	
	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total 2021	Total 2020	Total 2021	Total 2020
<1	0	4	4	7	15	8	24.6	13.1
1-4	9	6	14	8	37	22	14.6	8.7
5-14	3	4	6	2	15	11	2.2	1.6
25-44	7	14	13	10	44	35	3.1	2.5
45-64	6	24	22	11	63	56	4.9	4.4
65+	10	29	25	11	75	70	9	8.4
Total	36	83	90	50	259	216	5	4.2

Annual age specific rate per 100,000 population per year using ERP for 2020 and 2021 (ABS Catalogue no. 3235.0)

Pertussis

There were 36 notifications of pertussis in Q4 2021 and a total of 99 notifications of pertussis for the year with no deaths reported. The highest rate of notifications was seen in the 1–2 year age group in 2021 (Table 6). The 2021 notifications and rates of pertussis were 80 per cent lower than the notifications and rates of 2020.

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 (dTpa) is recommended during every pregnancy (ideally between 20 and 32 weeks).

Table 6: Number and rates of pertussis notifications in Queensland by age group and quarter, 2021 and 2020–2021

Pertussis Age Group	Number of notifications						Notification rate#	
	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total 2021	Total 2020	Total 2021	Total 2020
<1	0	1	2	1	4	7	6.6	11.5
1–2	1	6	0	3	10	13	8.1	10.5
3–4	3	0	3	1	7	17	5.4	13.1
5–9	0	1	2	7	10	104	2.9	30.7
10–14	4	2	0	15	21	75	6.1	21.7
15–19	3	0	0	3	6	43	1.9	13.5
20–49	8	4	8	3	23	127	1.1	6
50–64	4	3	0	2	9	60	1	6.5
65+	1	4	3	1	9	44	1.1	5.3
Total	24	21	18	36	99	490	1.9	9.5

Annual age specific rate per 100,000 population per year using ERP for 2020 and 2021 (ABS Catalogue no. 3235.0)

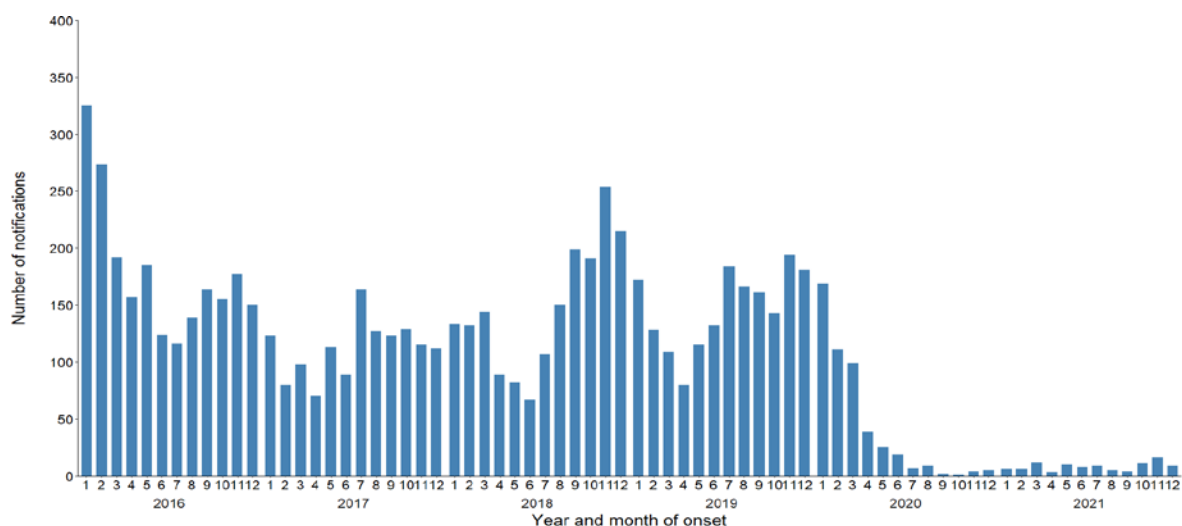


Figure 8: Notifications of pertussis in Queensland by month and year of onset, 1 January 2016 to 31 December 2021

Table 7: Notifications of pertussis in Queensland in children aged younger than one year by quarter, 2021 and 2020-2021

Age Group	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total 2021	Total 2020
<1 month	0	0	0	0	0	1
1 month	0	0	1	0	1	0
2 months	0	0	1	0	1	0
3 months	0	0	0	0	0	0
4 months	0	0	0	0	0	1
5 months	0	0	0	0	0	1
6 months	0	0	0	0	0	1
7 months	0	1	0	0	1	1
8 months	0	0	0	0	0	0
9 months	0	0	0	0	0	1
10 months	0	0	0	0	0	0
11 months	0	0	0	1	1	1
Total	0	1	2	1	4	7

Table 8: Maternal vaccination status for mother of pertussis cases reported in Queensland in children aged younger than one year by quarter, 2021 and 2020-2021

Maternal vaccination status	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total 2021	Total 2020
Vaccinated	0	0	1	1	2	4
Not Vaccinated	0	0	1	0	1	3
Not asked	0	1	0	0	1	0
Unknown	0	0	0	0	0	0
Total	0	1	2	1	4	7

Rotavirus

There were 286 notifications of rotavirus in Q4 2021 and a total of 601 notifications in 2021. The highest number and rate of notification was seen in children younger than 1 year of age. The 2021 notifications and rates of rotavirus were 1.9 times higher than the notifications and rates of 2020. 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.

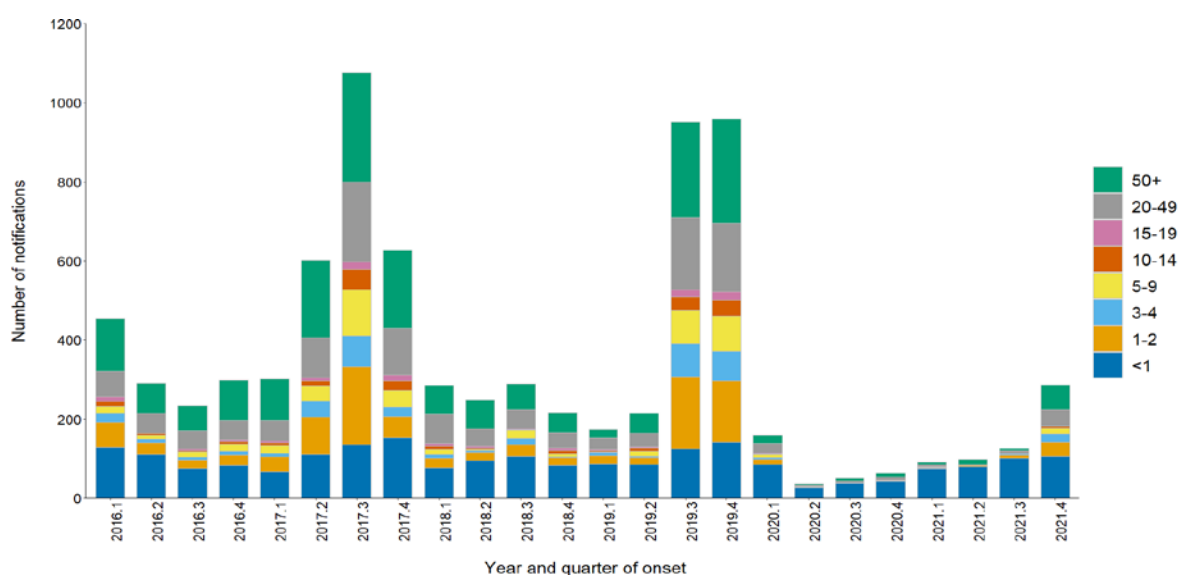


Figure 9: Notifications of rotavirus in Queensland by age group and quarter and year of onset, 1 January 2016 to 31 December 2021

Table 9: Number and rate of rotavirus notifications in Queensland by age group in years and quarter, 2021 and 2020-2021

Rotavirus Age Group	Number of notifications						Notification rate#	
	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total 2021	Total 2020	Total 2021	Total 2020
<1	74	80	101	106	361	192	591.3	314.5
1-2	2	2	8	35	47	14	38	11.3
3-4	1	0	3	21	25	7	19.3	5.4
5-9	1	0	1	15	17	9	5	2.7
10-14	0	0	0	4	4	3	1.2	0.9
15-19	2	0	0	1	3	6	0.9	1.9
20-49	5	4	8	42	59	36	2.8	1.7
50+	6	12	5	62	85	42	4.8	2.4
Total	91	98	126	286	601	309	11.6	6

Annual age specific rate per 100,000 population per year using ERP for 2020 and 2021 (ABS Catalogue no. 3235.0)

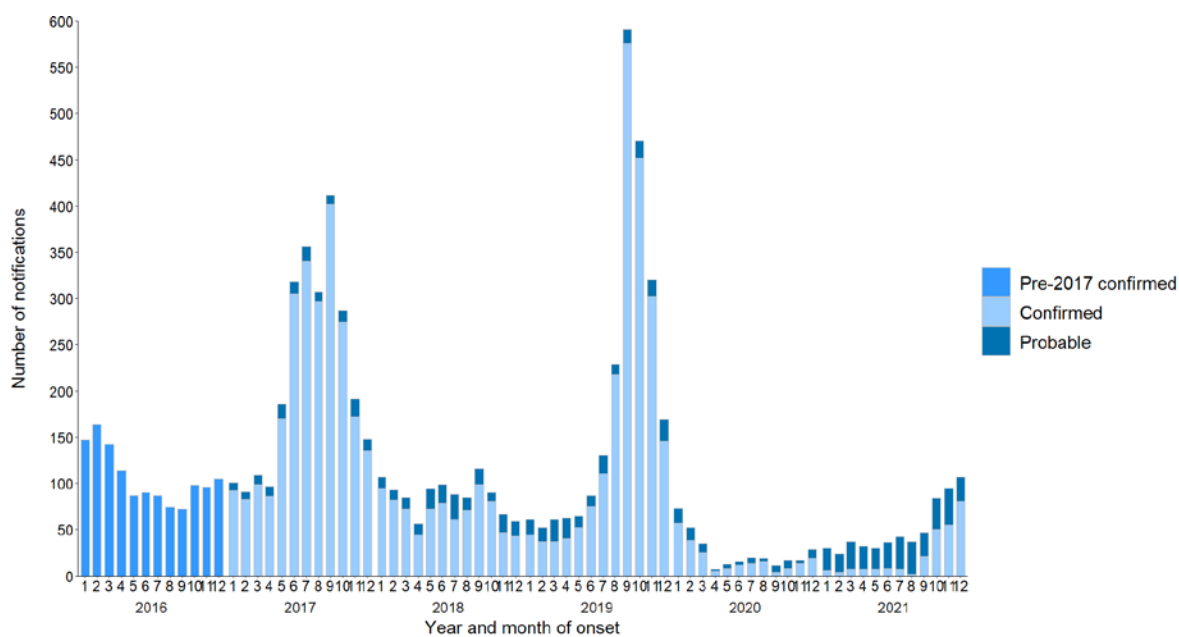


Figure 10: Notifications of rotavirus in Queensland by month and year of onset, 1 January 2016 to 31 December 2021

Table 10: Notifications of rotavirus in Queensland in children aged younger than one year by quarter, 2021 and 2020-2021

Age Group	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total 2021	Total 2020
<1 month	0	0	1	0	1	1
1 month	19	23	37	23	102	44
2 months	26	20	27	34	107	60
3 months	10	11	18	15	54	35
4 months	9	14	10	18	51	23
5 months	4	5	4	4	17	15
6 months	5	1	0	4	10	5
7 months	1	1	0	3	5	2
8 months	0	1	2	1	4	0
9 months	0	1	1	2	4	1
10 months	0	1	1	2	4	2
11 months	0	2	0	0	2	4
Total	74	80	101	106	361	192

Varicella-zoster virus infection

There were 2,755 notifications of varicella-zoster infection in Q4 2021 and a total of 10,318 notifications in 2021. 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 to 31 December 2020, all notifications of varicella-zoster virus infection were followed up to determine the clinical presentation is consistent with chickenpox or shingles (Figures 11, 12).

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, now extended until the end of October 2023. 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 by quarter, 2021 and 2020-2021

Age Group	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Total 2021	Total 2020
<1	0	6	6	9	21	0
1-2	21	26	29	26	102	117
3-4	16	10	12	14	52	81
5-7	39	28	49	37	153	195
8-9	26	29	54	47	156	162
10-59	1,463	1,333	1,446	1,610	5,852	5,879
60-69	511	499	512	501	2,023	1,868
70+	491	450	507	511	1,959	1,837
Total	2,567	2,381	2,615	2,755	10,318	10,139

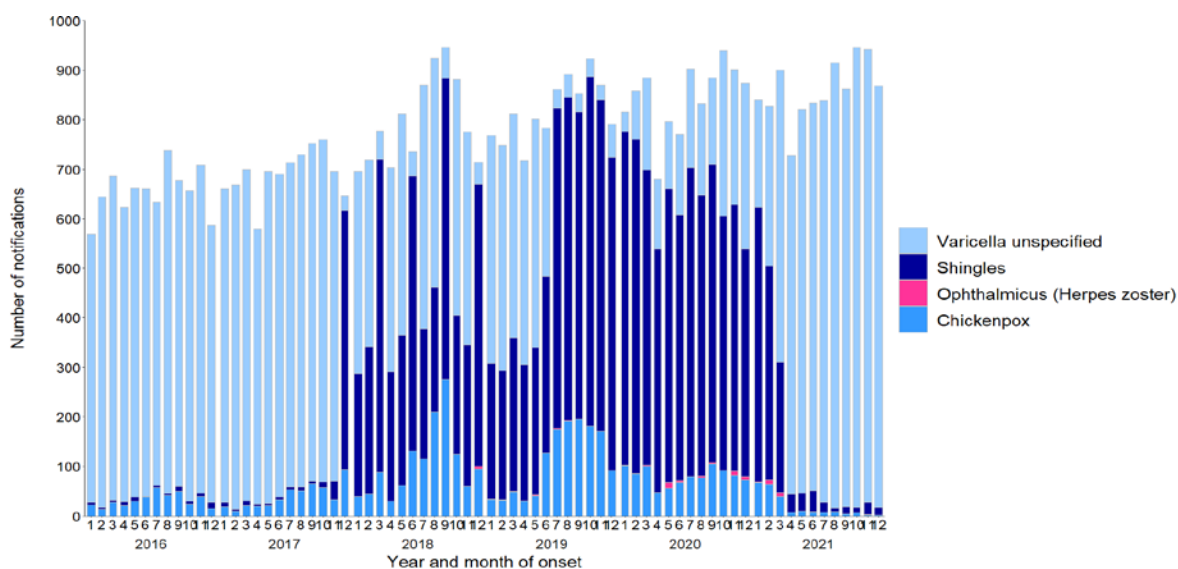


Figure 11: Notifications of varicella in Queensland by clinical presentation, 1 January 2016 to 31 December 2021

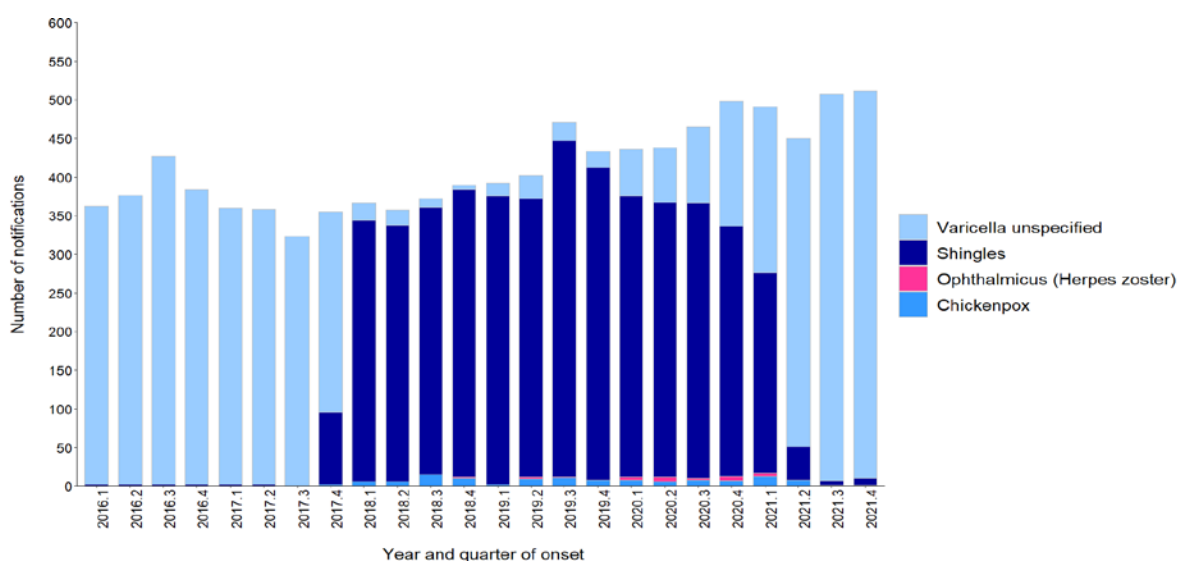


Figure 12: Notifications of varicella in Queensland by clinical presentation for people 70 years of age or older, 1 January 2016 to 31 December 2021

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/>