

# Vaccine preventable and invasive diseases in Queensland

1 Jan – 30 Sep 2021

## 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 September 2021. Data for this report were extracted from the Queensland Health notifiable conditions register on 28 October 2021 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: Notifications of vaccine preventable diseases in Queensland by quarter 2021, and year-to-date, 2020 – 2021


Disease	Q1 2021	Q2 2021	Q3 2021	YTD 2021	YTD 2020
Diphtheria	0	1	3	4	6
Group A Streptococcal infection (invasive)	60	65	72	197	208
<i>Haemophilus influenzae</i> type b (invasive)	1	1	0	2	3
Measles	0	0	0	0	6
Meningococcal (invasive)	4	3	3	10	21
Mumps	3	0	1	4	32
Pertussis	24	21	18	63	480
Pneumococcal (invasive)	36	83	91	210	167
Rotavirus	91	98	126	315	246
Rubella	0	0	0	0	0
Tetanus	0	0	0	0	2
Varicella	2,567	2,381	2,614	7,562	7,425

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

**Diphtheria** – There were two notifications of cutaneous toxigenic *C. diphtheriae* from the Cairns and Hinterland and Torres and Cape HHS areas, and one cutaneous toxigenic *C. ulcerans* from the Townsville HHS area in quarter 3 2021 (Q3 2021), with cases aged 30, 11, and 23 years. The three cases acquired their infection in Queensland and were fully vaccinated.

**Invasive *Haemophilus influenzae* type b (Hib) disease** – There were no notifications in Q3 2021.

**Measles** – There have been no notifications of measles in YTD 2021.



**Mumps** – There was one notification of mumps from the Gold Coast HHS area in Q3 2021 in an unvaccinated, non-Indigenous 64-year-old female.

**Rubella** – There have been no notifications of rubella in YTD 2021.

**Tetanus** – There have been no notifications of tetanus in YTD 2021.

## Invasive group A streptococcal infection

There were 72 notifications of invasive group A streptococcal (iGAS) infection in Q3 2021, with two deaths. The majority of cases (76%) were adults aged 20 years or older. Of the two deaths, one death occurred in an adult aged 87 years and one death in under 5 years age-group. Indigenous status was available for 70 (97%) reported cases. Of these, 18 (26%) cases occurred in Aboriginal and/or Torres Strait Islander people.

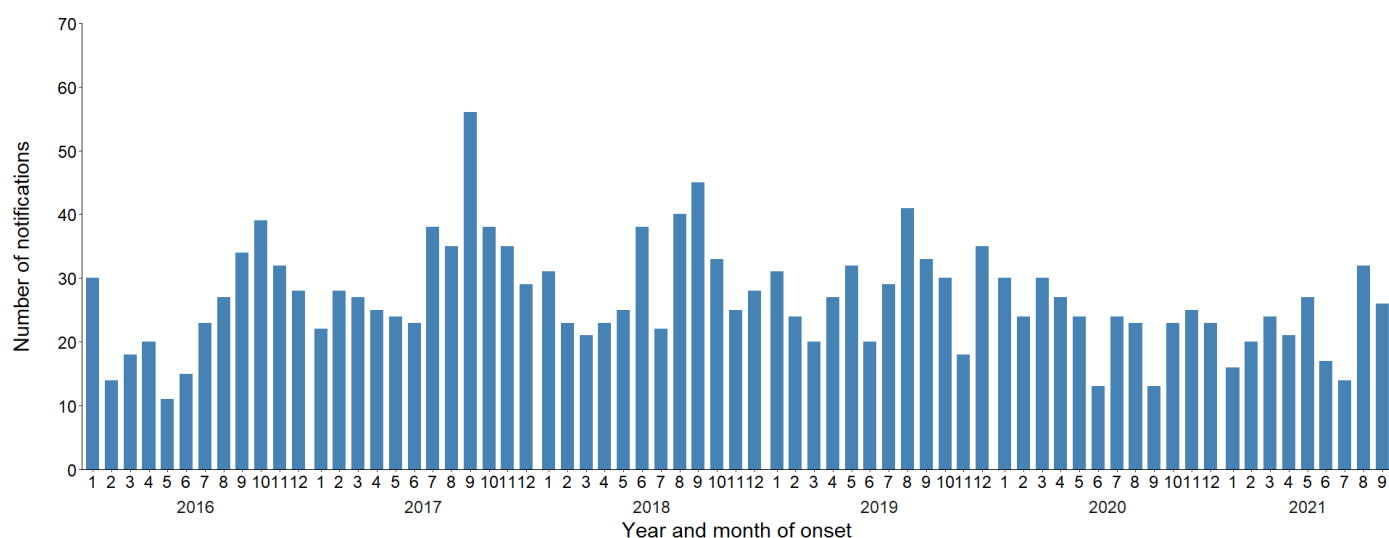


Figure 1: Notifications of invasive group A streptococcal infection in Queensland by year and month of onset, 1 January 2016 to 30 September 2021

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

Age Group	Q1 2021	Q2 2021	Q3 2021	YTD 2021	YTD 2020
0–4	3	8	12	23	20
5–9	2	3	3	8	3
10–14	1	1	0	2	2
15–19	5	1	2	8	4
20–24	0	1	1	2	8
25–44	13	19	17	49	44
45–64	18	12	15	45	56
65+	18	20	22	60	71
<b>Total</b>	<b>60</b>	<b>65</b>	<b>72</b>	<b>197</b>	<b>208</b>

## Invasive meningococcal disease

There were three notifications of invasive meningococcal disease (IMD) in Q3 2021, 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®) became 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 conditions that increase their risk of IMD.

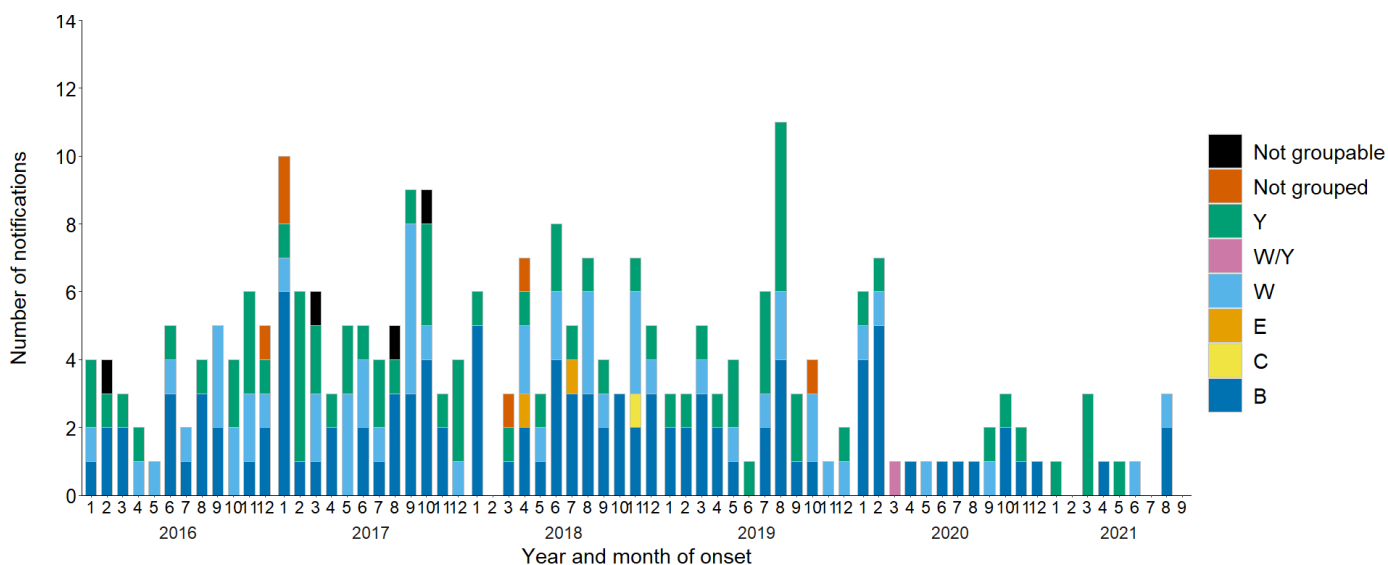


Figure 2: Notifications of invasive meningococcal disease in Queensland by year and month of onset, 1 January 2016 to 30 September 2021

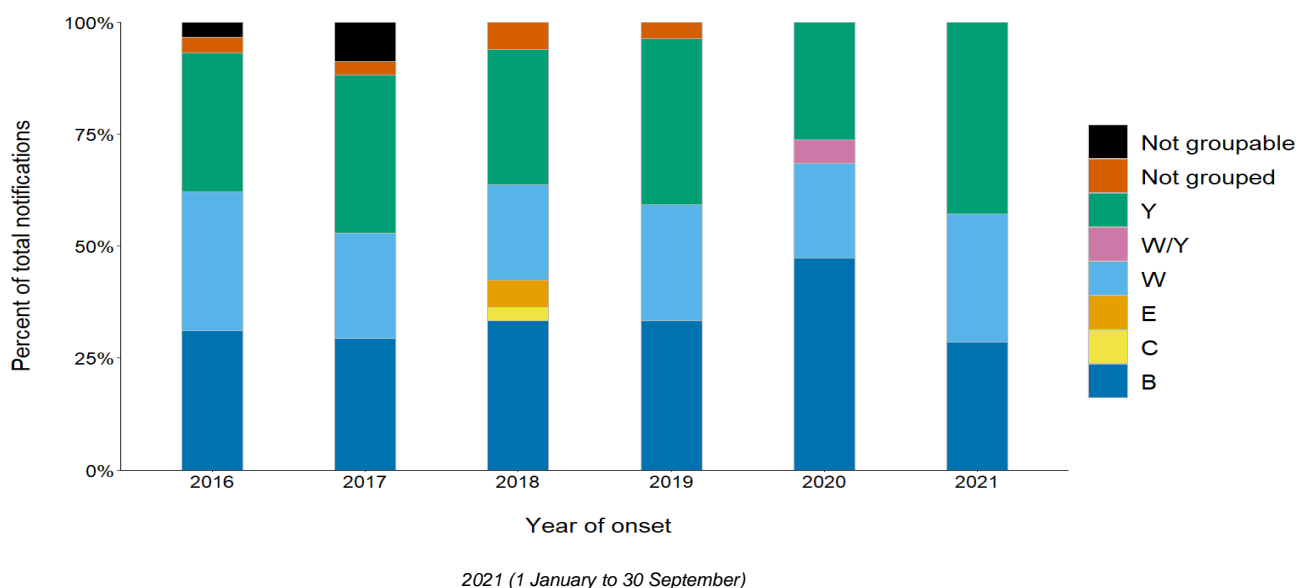


Figure 3: Notifications of invasive meningococcal disease in Queensland by year and serogroup, 1 January 2016 to 30 September 2021

Table 3: Notifications of invasive meningococcal infection in Queensland by serogroup and age group in years, 1 January to 30 September 2021

Age Group	Group B	Group C	Group E	Group W	Group Y	Not groupable	Not grouped	Total
0–4	1	0	0	2	0	0	0	3
5–9	0	0	0	0	0	0	0	0
10–14	0	0	0	0	0	0	0	0
15–19	1	0	0	0	0	0	0	1
20–24	0	0	0	0	0	0	0	0
25+	1	0	0	0	5	0	0	6
<b>Total</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>10</b>

## Invasive pneumococcal disease

There were 91 invasive pneumococcal disease (IPD) notifications in Q3 2021, with five deaths reported. Of the five deaths, three deaths occurred in adults aged between 50 and 70 years and two deaths in children younger than one year 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

Queensland has been using

- Since 1 July 2011, Prevenar 13® (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.

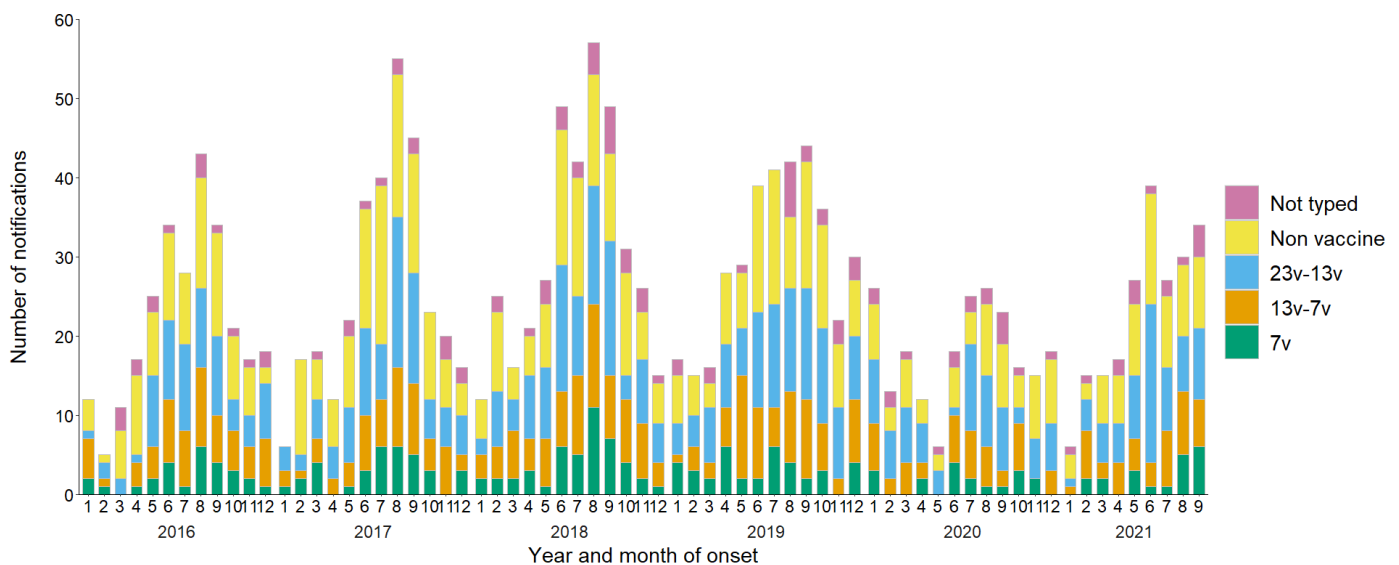


Figure 4: Notifications of invasive pneumococcal disease in Queensland by year and month of onset, 1 January 2016 to 30 September 2021

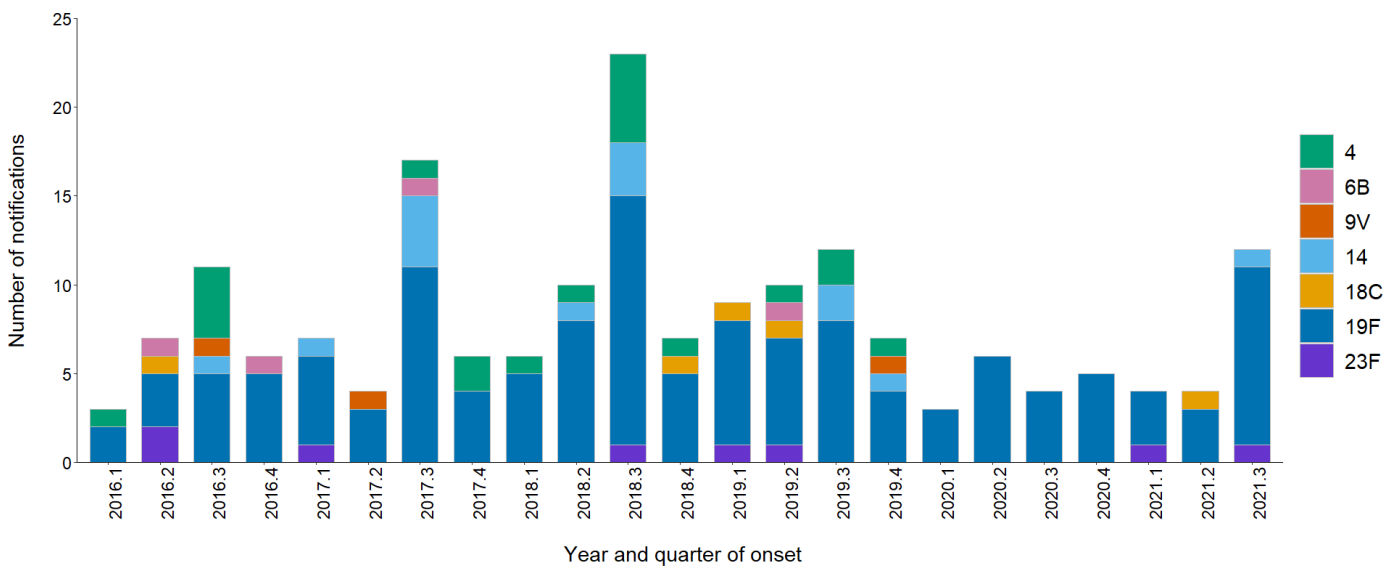


Figure 5: Notifications of 7v serotypes of invasive pneumococcal disease in Queensland by year and quarter of onset, 1 January 2016 to 30 September 2021.

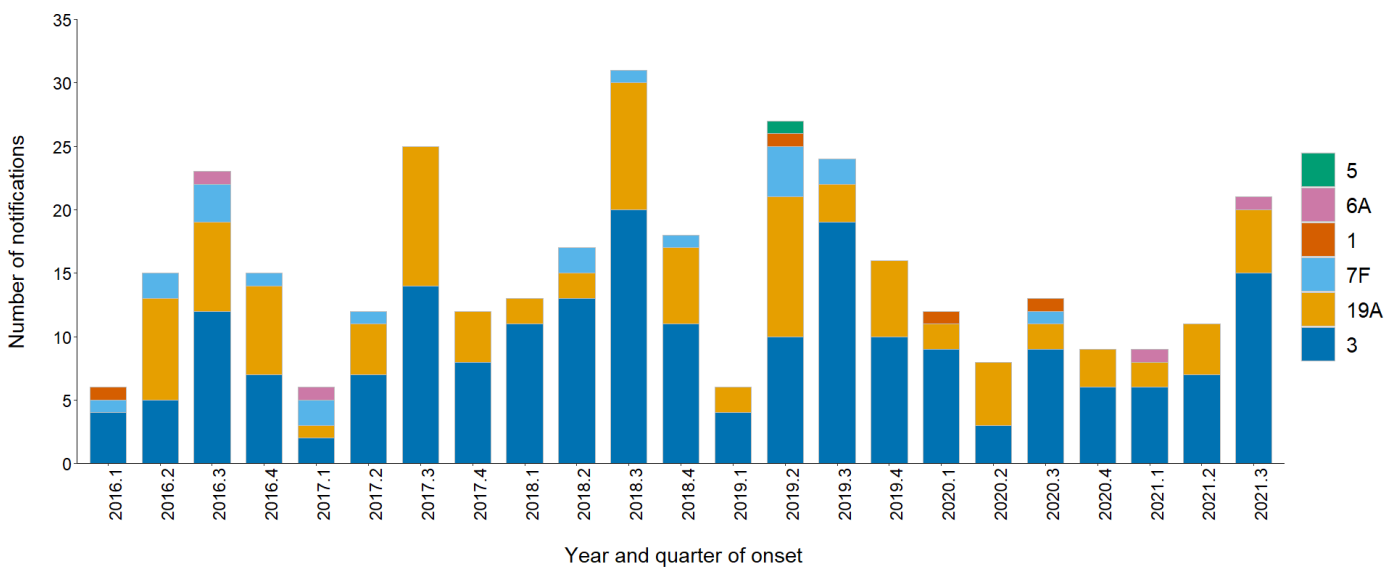


Figure 6: Notifications of 13v-7v serotypes of invasive pneumococcal disease in Queensland by year and quarter of onset, 1 January 2016 to 30 September 2021

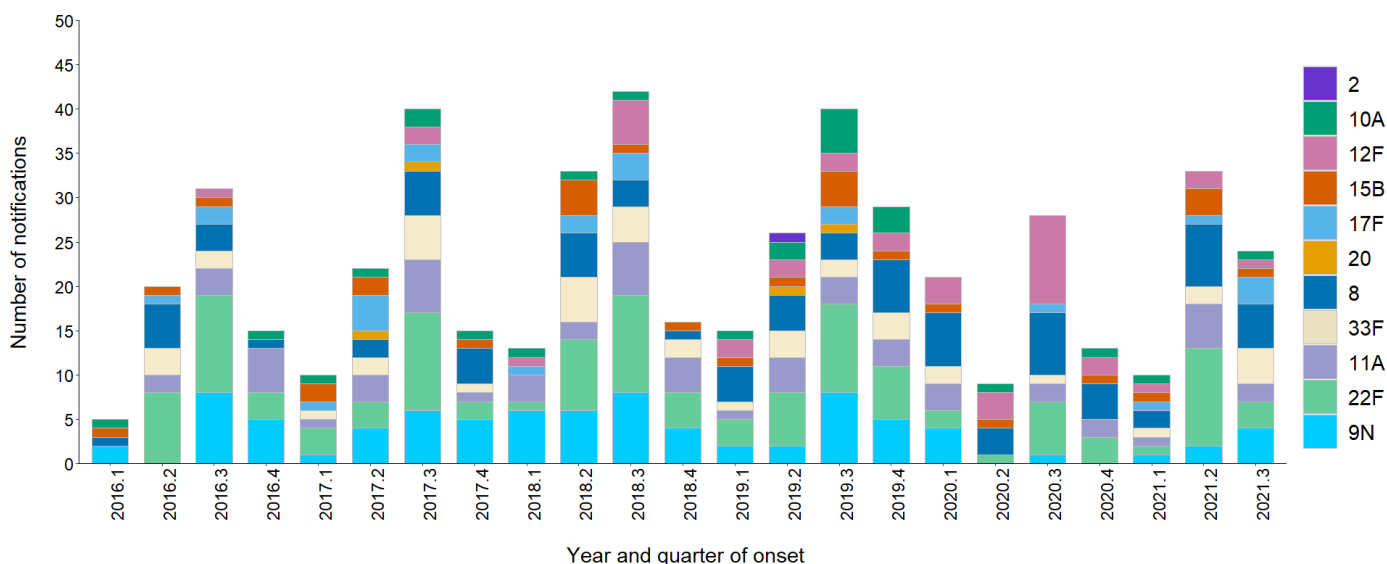


Figure 7: Notifications of 23v-13v serotypes of invasive pneumococcal disease in Queensland by year and quarter of onset, 1 January 2016 to 30 September 2021

In YTD 2021, the most commonly notified IPD serotypes were 3, 19F, 22F, 23B, 8, 19A, 6C, 11A, 16F, 33F, 9N, 15B, 17F, and 23A accounting for 73% of all IPD notifications in the time period.

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

Serotype	Vaccine inclusion	Q1 2021	Q2 2021	Q3 2021	YTD 2021	YTD 2021
3	13v-7v	6	7	15	28	21
19F	7v	3	3	10	16	13
22F	23v-13v	1	11	3	15	9
23B	Non vaccine	2	7	6	15	14
8	23v-13v	2	7	5	14	16
19A	13v-7v	2	4	5	11	9
6C	Non vaccine	1	5	5	11	5
11A	23v-13v	1	5	2	8	5
16F	Non vaccine	3	3	1	7	5
33F	23v-13v	1	2	4	7	3
9N	23v-13v	1	2	4	7	5
15B	23v-13v	1	3	1	5	2
17F	23v-13v	1	1	3	5	1
23A	Non vaccine	0	3	2	5	4

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

Age Group	Number of notifications					Notification rate#	
	Q1 2021	Q2 2021	Q3 2021	YTD 2021	YTD 2020	YTD 2021	YTD 2020
<1	0	4	4	8	2	17.5	4.4
1–4	9	6	14	29	17	15.3	9
5–14	3	4	6	13	10	2.5	2
15–24	1	2	6	9	13	1.8	2.6
25–44	7	14	14	35	29	3.3	2.7
45–64	6	24	22	52	44	5.5	4.6
65+	10	29	25	64	52	10.3	8.4
<b>Total</b>	<b>36</b>	<b>83</b>	<b>91</b>	<b>210</b>	<b>167</b>	<b>5.4</b>	<b>4.3</b>

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

## Pertussis

There were 18 notifications of pertussis in Q3 2021 with no deaths reported. The highest rate of notifications was seen in the 1–2 year age group in YTD 2021 (Table 6). The YTD 2021 notifications and rates of pertussis were 87% lower than the notifications and rates of YTD 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 (dTa) is recommended during every pregnancy (ideally between 20 and 32 weeks).

Table 6: Number and rate of pertussis notifications in Queensland by age group and quarter, 2021 and year-to-date, 2020-2021

Age Group	Number of notifications					Notification rate#	
	Q1 2021	Q2 2021	Q3 2021	YTD 2021	YTD 2020	YTD 2021	YTD 2020
<1	0	1	2	3	7	6.6	15.3
1–2	1	6	0	7	13	7.6	14
3–4	3	0	3	6	17	6.2	17.5
5–9	0	1	2	3	102	1.2	40.2
10–14	4	2	0	6	73	2.3	28.3
15–19	3	0	0	3	42	1.3	17.6
20–49	8	4	8	20	127	1.3	8.1
50–64	4	3	0	7	58	1	8.4
65+	1	4	3	8	41	1.3	6.6
<b>Total</b>	<b>24</b>	<b>21</b>	<b>18</b>	<b>63</b>	<b>480</b>	<b>1.6</b>	<b>12.4</b>

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



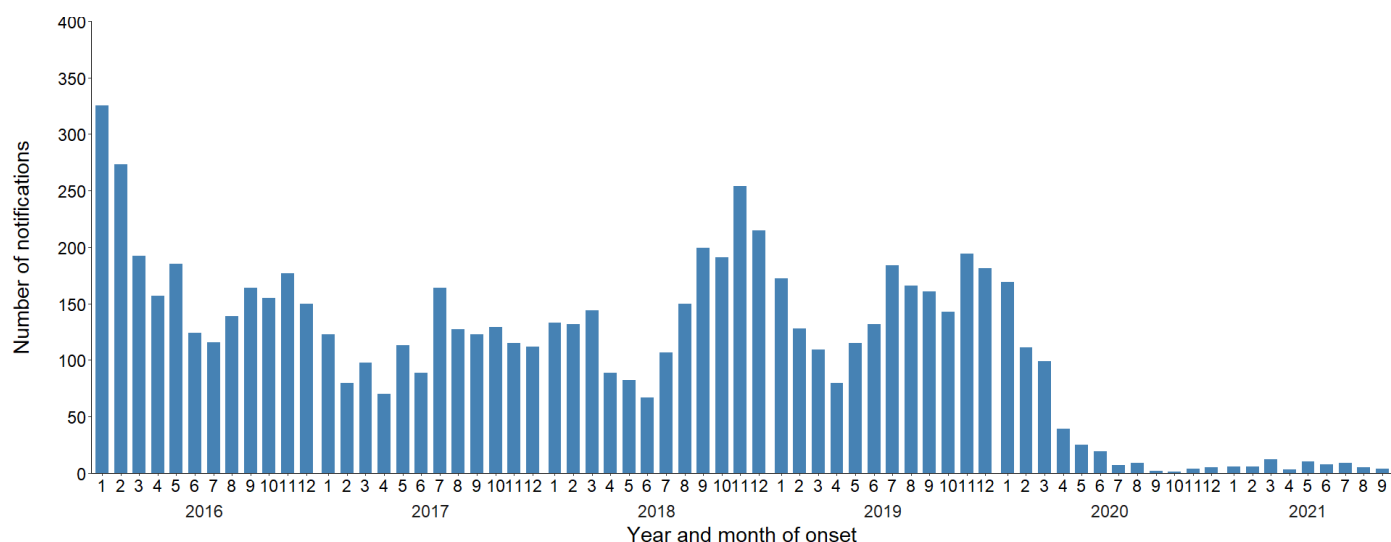


Figure 8: Notifications of pertussis in Queensland by month and year of onset, 1 January 2016 to 30 September 2021

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

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

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

Maternal vaccination status	Q1 2021	Q2 2021	Q3 2021	YTD 2021	YTD 2020
Vaccinated	0	0	1	1	4
Not Vaccinated	0	0	1	1	3
Not asked	0	1	0	1	0
Unknown	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>7</b>

## Rotavirus

There were 126 notifications of rotavirus in Q3 2021. 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.

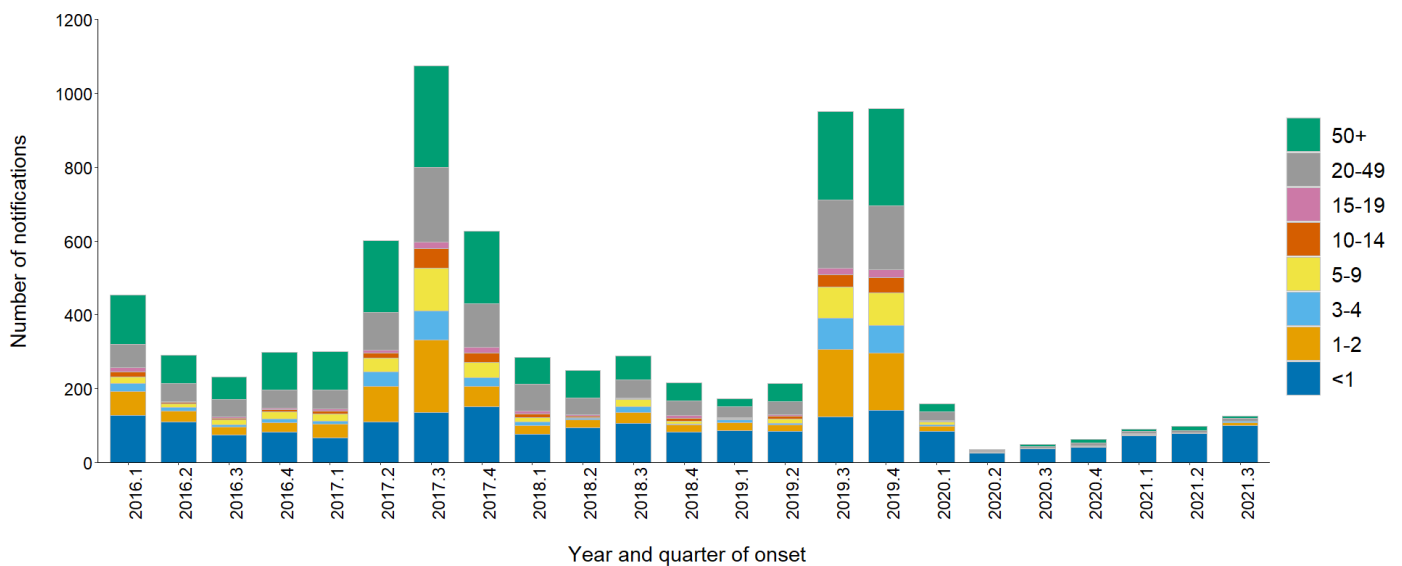


Figure 9: Notifications of rotavirus in Queensland by age group and quarter and year of onset, 1 January 2016 to 30 September 2021

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

Age Group	Number of notifications					Notification rate <sup>#</sup>	
	Q1 2021	Q2 2021	Q3 2021	YTD 2021	YTD 2020	YTD 2021	YTD 2020
<1	74	80	101	255	150	558.5	328.5
1–2	2	2	8	12	13	13	14
3–4	1	0	3	4	6	4.1	6.2
5–9	1	0	1	2	8	0.8	3.2
10–14	0	0	0	0	3	0	1.2
15–19	2	0	0	2	5	0.8	2.1
20–49	5	4	8	17	29	1.1	1.8
50+	6	12	5	23	32	1.7	2.4
<b>Total</b>	<b>91</b>	<b>98</b>	<b>126</b>	<b>315</b>	<b>246</b>	<b>8.1</b>	<b>6.4</b>

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

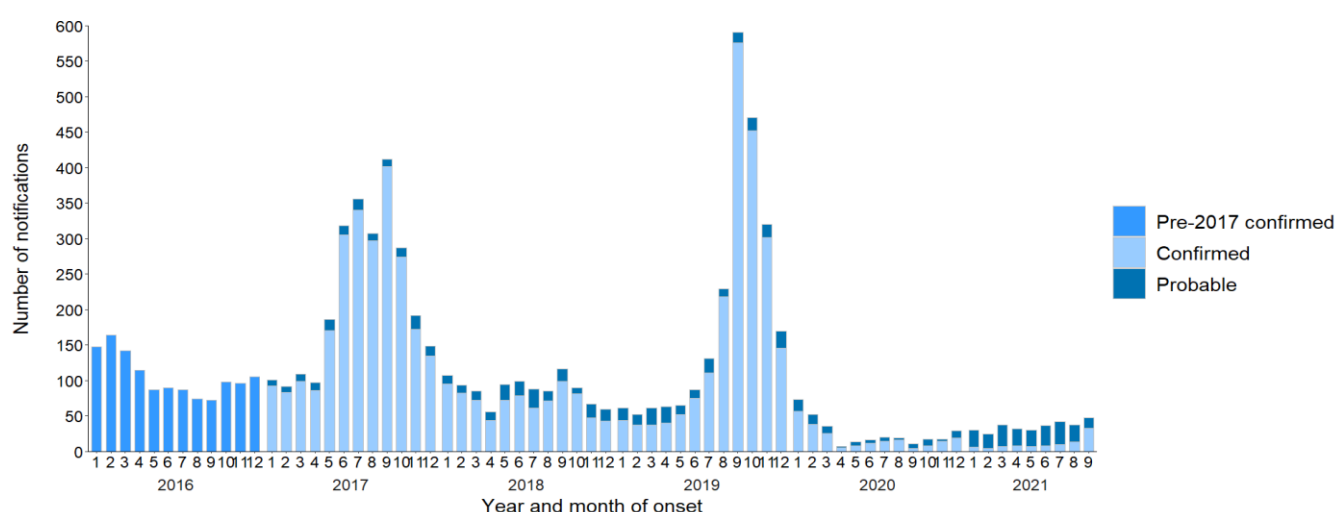


Figure 10: Notifications of rotavirus in Queensland by month and year of onset, 1 January 2016 to 30 September 2021

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

Age Group	Q1 2021	Q2 2021	Q3 2021	YTD 2021	YTD 2020
<1 month	0	0	1	1	1
1 month	19	23	37	79	34
2 months	26	20	27	73	50
3 months	10	11	18	39	29
4 months	9	14	10	33	15
5 months	4	5	4	13	10
6 months	5	1	0	6	4
7 months	1	1	0	2	2
8 months	0	1	2	3	0
9 months	0	1	1	2	1
10 months	0	1	1	2	1
11 months	0	2	0	2	3
<b>Total</b>	<b>74</b>	<b>80</b>	<b>101</b>	<b>255</b>	<b>150</b>

## Varicella-zoster virus infection

There were 2,614 notifications of varicella-zoster infection in Q3 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 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 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 and clinical presentation, Q1 2021 – Q3 2021

Age Group	Q12021					Q22021					Q32021				
	Chickenpox	Shingles	Ophthalmic (Herpes zoster)	Unspecified	Total	Chickenpox	Shingles	Ophthalmic (Herpes zoster)	Unspecified	Total	Chickenpox	Shingles	Ophthalmic (Herpes zoster)	Unspecified	Total
<1	3	0	0	6	9	0	0	0	14	14	0	0	0	17	17
1–2	3	2	0	7	12	1	0	0	17	18	2	0	0	16	18
3–4	9	1	0	6	16	0	0	0	10	10	0	0	0	12	12
5–7	23	3	0	13	39	0	0	0	28	28	2	1	0	46	49
8–9	9	4	0	13	26	0	0	0	29	29	3	0	0	51	54
10–59	97	693	9	664	1,463	3	30	0	1,300	1,333	11	23	0	1,411	1,445
60–69	9	274	6	222	511	3	15	1	480	499	0	11	0	501	512
70+	12	251	4	224	491	4	26	0	420	450	1	6	0	500	507
<b>Total</b>	<b>165</b>	<b>1,228</b>	<b>19</b>	<b>1,155</b>	<b>2,567</b>	<b>11</b>	<b>71</b>	<b>1</b>	<b>2,298</b>	<b>2,381</b>	<b>19</b>	<b>41</b>	<b>0</b>	<b>2,554</b>	<b>2,614</b>

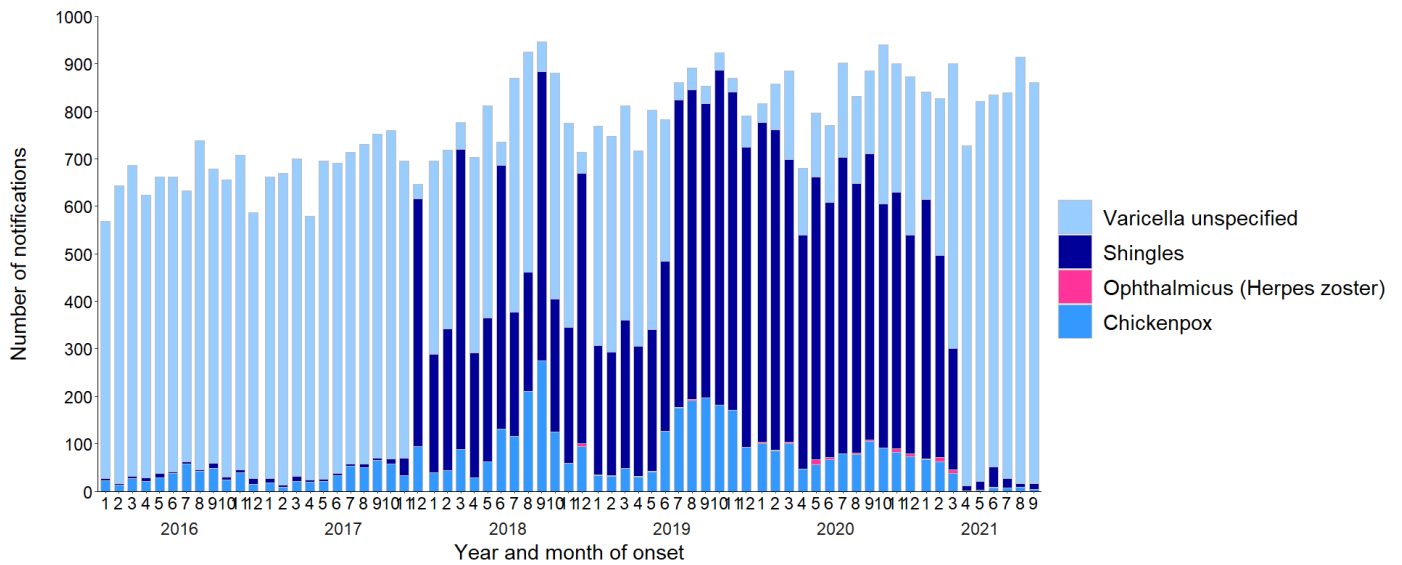


Figure 11: Notifications of varicella in Queensland by clinical presentation, 1 January 2016 to 30 September 2021

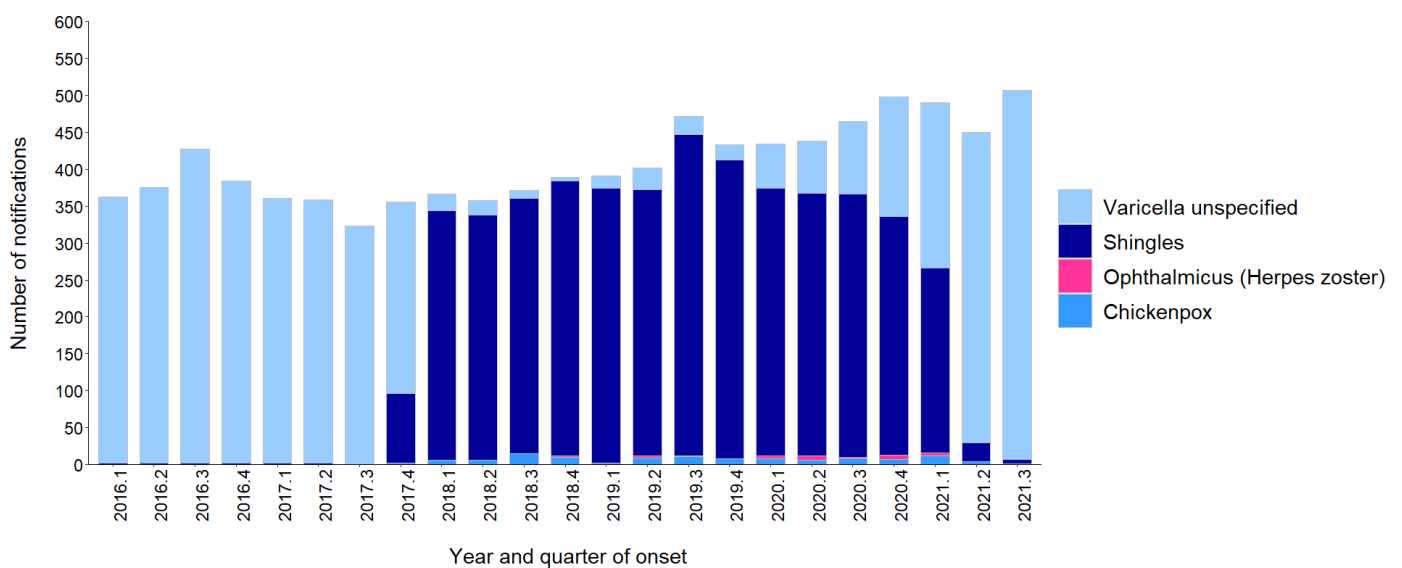


Figure 12: Notifications of varicella in Queensland by clinical presentation for people 70 years of age or older, 1 January 2016 to 30 September 2021

### 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/>