



Communicable Diseases Prevention Unit,
Public Health Services

Vaccine Preventable Diseases Surveillance Report 2023

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Abbreviation table

| Abbreviation | Definition |
|--------------|---------------------------------------------------|
| Hib | Invasive <i>Haemophilus influenzae</i> type b |
| IMD | Invasive meningococcal disease |
| IPD | Invasive pneumococcal disease |
| NIP | National Immunisation Program |
| TNDSS | Tasmanian Notifiable Diseases Surveillance System |
| VPD | Vaccine preventable diseases |
| VZV | Varicella zoster virus |

Summary

This report presents trends in notifiable vaccine preventable diseases (VPDs) in Tasmania for 2023. Data for the five-year period from 2018 to 2022 is included for comparison. Notifications of VPDs notified from 2018 to 2023 are presented in Table 1.

In 2023 in Tasmania:

- Varicella infections – chickenpox, shingles, and ‘varicella zoster-unspecified’ infections - were the most notified VPD, accounting for 89% of all notifications. This was followed by rotavirus (6%) and invasive pneumococcal disease (4%).
- Pertussis (whooping cough) notifications have increased compared to 2022 but remained low and at inter-epidemic levels compared to the last epidemic period from 2018 to 2019.
- Invasive pneumococcal disease (IPD) notifications increased compared to 2022. IPD notifications in 2020 were the lowest (n=14) reported in Tasmania since IPD became notifiable in 2001, likely due to public health and social measures implemented in response to COVID-19. There was one reported death associated with IPD infection in 2023.
- There were five notifications of invasive meningococcal disease (IMD). Of these, three were due to serogroup B, and two could not be typed. Notifications of IMD due to W and Y serogroups remains low following the introduction of ACWY vaccination programs.
- There were two notifications of mumps, and one notification of measles. These were the first notifications of mumps and measles in Tasmania since 2019.
- There were no notifications of diphtheria, invasive *Haemophilus influenzae* type b, poliovirus, rubella, or tetanus.
- Tasmanian VPD notification rates were lower than, or comparable to, national rates for all VPDs, except for IMD and varicella infection, which were slightly higher than the national average (Appendix 1).

Table 1. Notifications of vaccine preventable diseases in Tasmania by year, 2018 to 2023

| Disease | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|-----------------------------------------------|--------------|--------------|-------------|-------------|-------------|--------------|
| Diphtheria | 0 | 0 | 0 | 0 | 0 | 0 |
| Invasive <i>Haemophilus influenzae</i> type b | 0 | 0 | 0 | 0 | 0 | 0 |
| Measles | 1 | 1 | 0 | 0 | 0 | 1 |
| Invasive meningococcal disease | 11 | 6 | 3 | 2 | 3 | 5 |
| Mumps | 1 | 4 | 0 | 0 | 0 | 2 |
| Pertussis | 418 | 565 | 65 | 6 | 3 | 12 |
| Invasive pneumococcal disease | 44 | 37 | 14 | 38 | 26 | 38 |
| Poliovirus | 0 | 0 | 0 | 0 | 0 | 0 |
| Rotavirus | 38 | 76 | 46 | 20 | 64 | 61 |
| Rubella | 0 | 0 | 0 | 0 | 0 | 0 |
| Tetanus | 0 | 0 | 0 | 0 | 0 | 0 |
| Varicella | 654 | 734 | 765 | 897 | 860 | 935 |
| Total | 1 167 | 1 423 | 893 | 963 | 956 | 1 054 |

Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS)

Introduction

This report provides an overview of the epidemiology of notifiable vaccine preventable diseases (VPDs) in Tasmania for which vaccines are funded under the [National Immunisation Program \(NIP\)](#). These diseases are diphtheria, invasive *Haemophilus influenzae* type b disease, measles, invasive meningococcal disease, mumps, pertussis (whooping cough), invasive pneumococcal disease, rotavirus, rubella, tetanus and varicella. Data on COVID-19 and influenza are reported in dedicated respiratory surveillance reports through the season and are not included in this report. For the purposes of reporting, hepatitis B is considered a blood borne virus and not included in this report, although hepatitis B vaccines are funded on the NIP.

This report is based on data extracted from the Tasmanian Notifiable Diseases Surveillance System (TNDSS). The TNDSS is a live database, and these data are subject to change. In Tasmania, the *Public Health Act (1997)* requires laboratories and clinicians to notify the Director of Public Health of cases of certain diseases, including VPDs. Enhanced data on exposures, vaccination history and risk factors are collected for a subset of VPDs. Notifications presented in this report are classified as confirmed or probable as per the national surveillance case definitions, available on the [CDNA surveillance case definitions website](#).

Australian Bureau of Statistics population data cubes (2023) were used to calculate Tasmanian and Australian rates of disease. Case information is presented based on symptom onset date, where known. Specimen collection date or notification date were used as a proxy if symptom onset was not available.

Caveats:

- Data presented in this report may not exactly match those in national reports due to differences in information management in respective databases.
- The completeness of Indigenous status for VPDs where there is no public health follow-up and only laboratory information provided is low.
- Reporting of mortality in association with a notifiable VPD reflects information known at the time of notification and may be incomplete. Mortality reported in association with a VPD does not necessarily imply causation.
- Vaccination status may be verified from multiple sources, including self-report, medical records or the Australian Immunisation Register (AIR) record. Vaccination status using the AIR may be underreported as mandatory reporting of NIP vaccines was only introduced from July 2021.

Diphtheria

Diphtheria is a bacterial disease usually affecting the respiratory system but sometimes the skin and other mucous membranes. It is caused by strains of *Corynebacterium diphtheriae* that produce the diphtheria toxin. The diphtheria toxin can have serious effects on the heart and nervous system and 5-10% of cases with respiratory disease may die. Infection is acquired through breathing in the bacteria or direct contact with skin or articles contaminated by an infected person.

Diphtheria is now rare in Australia and most notified cases are acquired overseas. Diphtheria usually occurs in non- or under-immunised children but may also affect adults as immunity declines with increasing age. Diphtheria vaccination is recommended and funded under the NIP for children at six weeks, four months, six months, 18 months, four years and 11-13 years of age.

Diphtheria in Tasmania 2023

There were no notifications of diphtheria in 2023. There have been no cases of diphtheria reported in Tasmania since it became notifiable in 1991.

Invasive *Haemophilus influenzae* type b disease

Haemophilus influenzae bacteria are commonly found in the throat of healthy people. Any strain of *H. influenzae* can occasionally invade the body and cause serious disease but the type b strain is the most pathogenic. Invasive disease due to *Haemophilus influenzae* type b (Hib) can cause meningitis, epiglottitis, septic arthritis, cellulitis, and pneumonia. Hib infection may be acquired through breathing in the bacteria through respiratory droplets or nasal discharges from people with or without symptoms. Invasive disease due to Hib most commonly affects young children aged between two months and three years and among people that are immunocompromised.

Invasive Hib is now rare in Australia following the introduction of routine vaccination in 1993. Hib vaccination is recommended and funded under the NIP for children at six weeks, four months, six months, and 18 months of age.

Invasive *Haemophilus influenzae* type b disease in Tasmania 2023

There were no notifications of invasive *Haemophilus influenzae* type b (Hib) disease in 2023. The last case of invasive Hib notified in Tasmania was in 2012.

Invasive meningococcal disease

Invasive meningococcal disease (IMD) is an invasive infection caused by one of several serogroups of *Neisseria meningitidis* bacteria. The bacteria are spread through respiratory droplets from the nose and throat of a person carrying the organism. Most infections with *N. meningitidis* result in very mild illness or no symptoms. Invasive infection is rare and clinically manifests in a range of syndromes, such as meningitis and septicaemia. Ten to fifteen per cent of people with invasive disease die and those that survive may have long-term neurological effects, hearing loss or loss of limbs. In recent years, the most common serogroups of this bacteria in Australia are B, W and Y.

Meningococcal C infections are now rare in Australia following the introduction of meningococcal C vaccination on the NIP from 2003 for all children at 12 months of age. In 2017, in response to the increase in IMD due to serogroup W in Tasmania, the State Government provided a ACWY vaccination program for all people aged between six weeks and 21 years of age. From 1 July 2018, due to the changing epidemiology of IMD in Australia, the meningococcal ACWY vaccine replaced the meningococcal C vaccine on the NIP for all children at 12 months of age. Meningococcal ACWY vaccine is also provided to year 10 students as part of the schools-based immunisation program. From July 2020, meningococcal B vaccine was funded by the NIP for Aboriginal and Torres Strait Islander children at 12 months of age (and as catch-up up at two years of age until December 2023) and for individuals of all ages with certain medical risk factors for IMD.

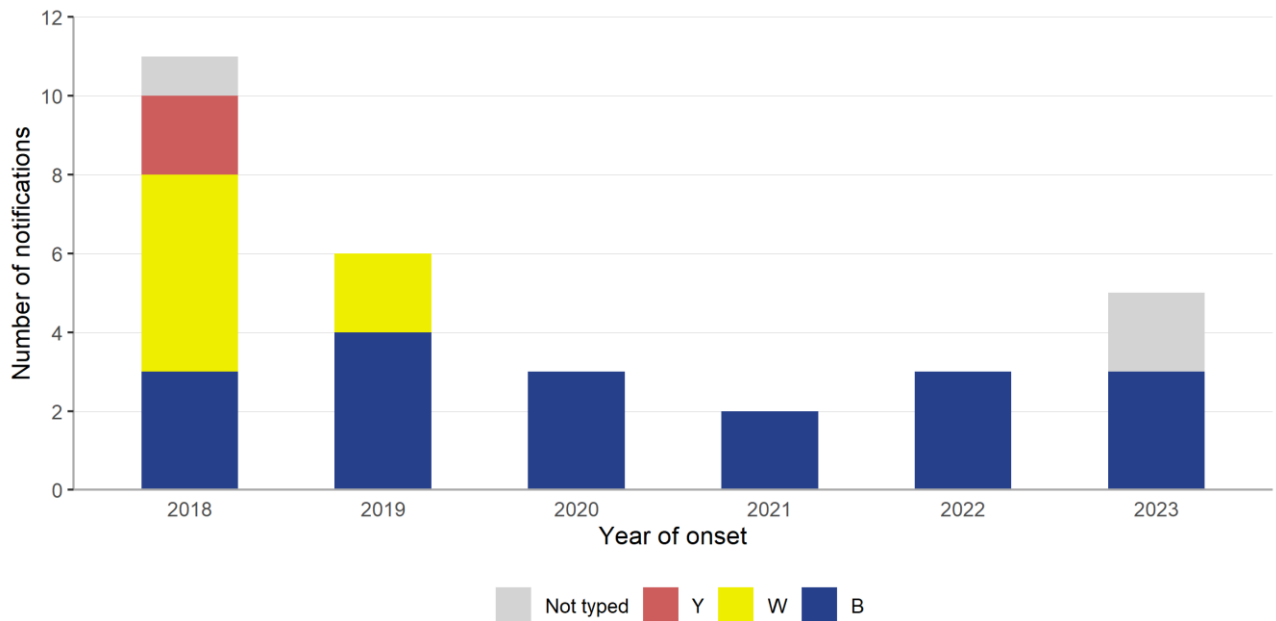
Invasive meningococcal disease in Tasmania 2023

There were five notifications of IMD in Tasmanian residents in 2023; three were serogroup B and two were not typed (Figure 1). The IMD notification rate in Tasmania was 0.9 per 100 000 population, 35% higher than the national notification rate of 0.5 per 100 000. The number of IMD notifications has remained low since a meningococcal W outbreak in 2017. This is consistent with national trends and follows the widespread introduction of meningococcal ACWY vaccination. The further reduction in notifications from 2020 to 2021 was likely attributable to the impact of public health and social measures implemented in response to the COVID-19 pandemic (Figure 1).

Of the five cases notified in 2023, three were female. There were two cases aged 15-24 years, and one case aged 25-49 years, 50-64 years, and 65 years and over. No cases were Aboriginal or Torres Strait Islander. All five cases were admitted to ICU, and one death associated with IMD was reported.

Among the three cases due to serogroup B, two cases in the 15-24 age group were partially vaccinated for age and one case aged 65-years and over was not vaccinated. The other two untyped cases were also unvaccinated as they had not received either a B or ACWY vaccine. The number of notifications of serogroup B infection in 2023 has remained similar to the previous five years in Tasmania, with notifications ranging from two to six per annum. All notifications of IMD were sporadic from 2018 to 2023, with no epidemiologically linked cases.

Figure 1. Notifications of invasive meningococcal disease in Tasmania by serogroup and year, 2018 to 2023



Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS)

Invasive pneumococcal disease

Invasive pneumococcal disease (IPD) is an infection caused by the bacterium *Streptococcus pneumoniae* (also known as pneumococcus). IPD occurs when the bacteria invade the body and cause serious disease such as pneumonia, septicaemia and meningitis. The bacteria can spread from person to person through breathing in respiratory droplets from infectious individuals or healthy carriers. Symptoms of IPD include fever, lethargy, seizures, coughing, breathing difficulties and chest pain, depending on the clinical manifestation of the disease. Young infants, the elderly, Aboriginal and Torres Strait Islander people and people with certain medical conditions are most at risk of developing invasive disease. There are over 90 serotypes of pneumococcal bacteria which vary in their propensity to cause disease.

The NIP funds vaccination against pneumococcal disease serotypes depending on age and risk group. 13-valent vaccine pneumococcal conjugate vaccines (13vPCV) protect against 13 serotypes; 23-valent pneumococcal polysaccharide vaccines (23vPPV) protect against 23. All children should receive 13vPCV vaccination at six weeks, four months and 12 months of age. Children with medical risk factors should receive additional vaccination at six months (13vPCV), four years of age (23vPPV) plus another dose five years later (23vPPV). Aboriginal and Torres Strait Islander adults aged 50 years and over should receive a course of three vaccinations (one dose of 13vPCV, two doses of 23vPPV); non-Indigenous adults aged 70 years and over should receive a single dose of 13vPCV vaccine.

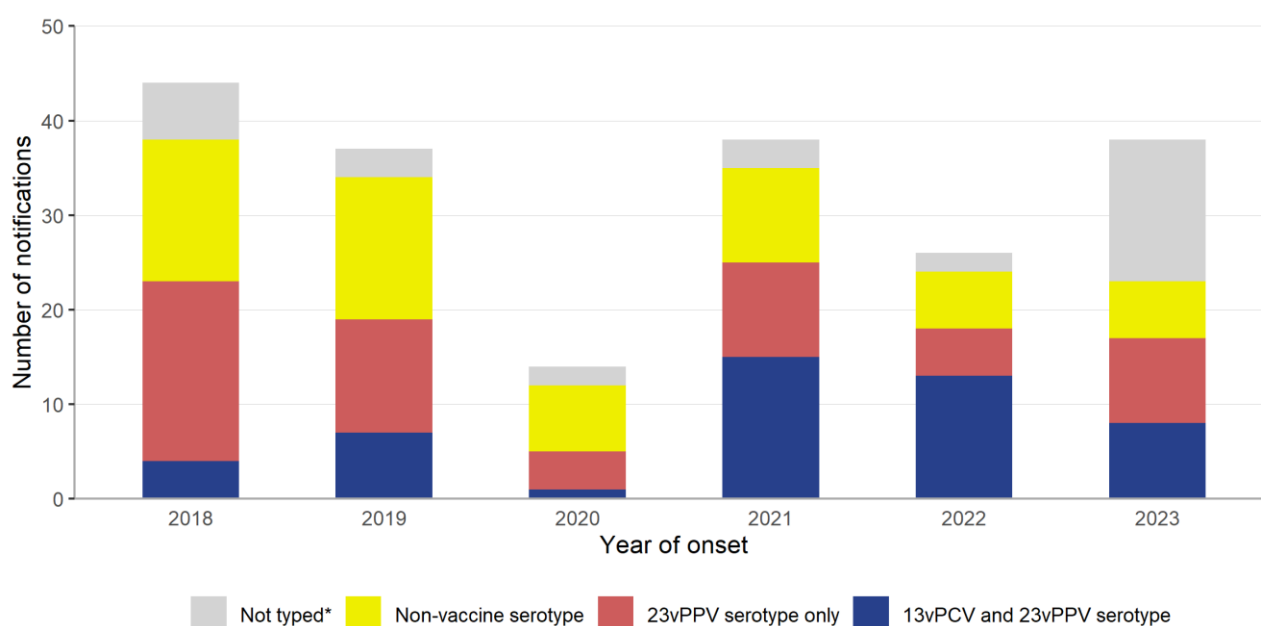
Information on the serotypes included in each vaccine is shown in Table A2 in Appendix 2.

Invasive pneumococcal disease in Tasmania 2023

There were 38 notifications of IPD in Tasmanian residents in 2023, a 46% increase from 26 notifications in 2022 (Figure 2). Historically, IPD notifications were relatively stable, however 2020 had the lowest number of notifications since IPD became notifiable (Figure 2), which were likely attributable to reduced transmission due to COVID-19 pandemic measures. IPD notification rates returned to pre-pandemic levels from 2021. In 2023, the IPD notification rate in Tasmania was 6.6 per 100 000 population, which was lower than the national notification rate of 8.4 per 100 000.

A higher incidence of IPD was observed in winter to early spring; the months with the highest notifications are August and September (Figure 3). Occasional unseasonal activity is observed, such as during December 2023. Seasonal patterns of IPD were disrupted during the COVID-19 pandemic in 2020, with significantly less notifications this year. Consistent with IPD notifications at the national level, the majority of IPD notifications in Tasmania in 2023 were in quarter two (29%) and quarter three (45%). There were just three notifications in quarter one (8%) and seven in quarter four (18%).

Figure 2. Notifications of invasive pneumococcal disease in Tasmania by year and vaccine category of infecting serotype, 2018 to 2023

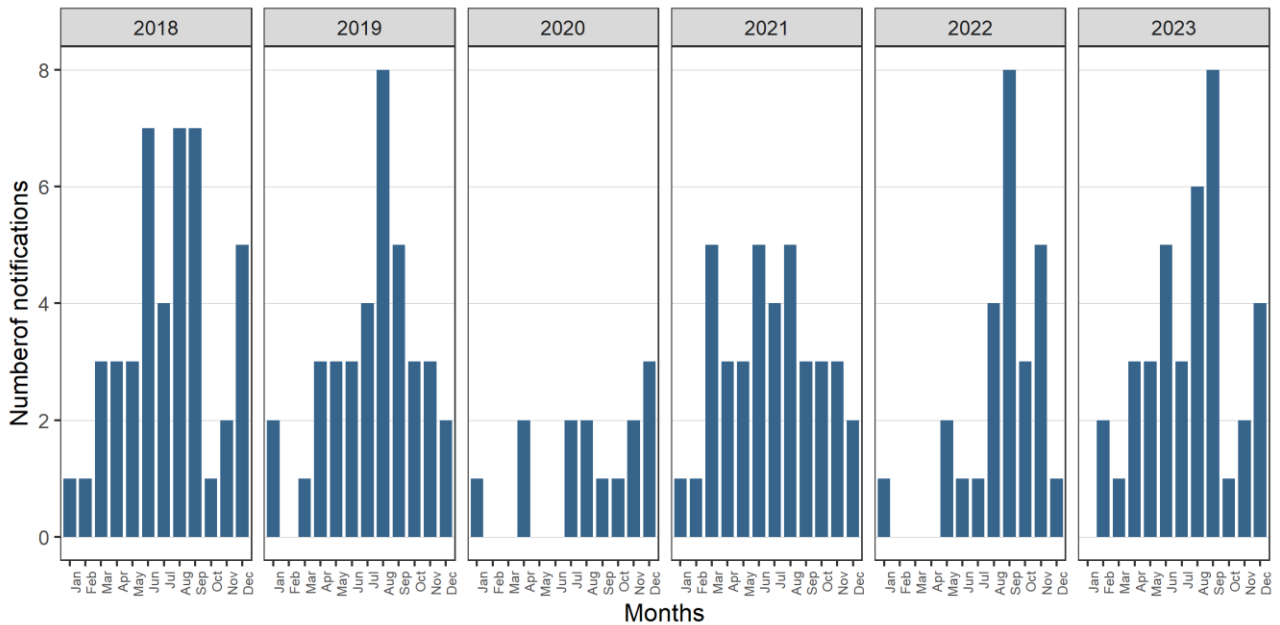


The serotype of each notification is categorised according to their inclusion in the vaccine: serotypes included in both the 13-valent and 23-valent vaccine as 13vPCV and 23vPPV, those included in the 23-valent vaccine as 23vPPV only. Serotypes not included in a NIP vaccine are categorised as a non-vaccine serotype.

*Not typed represents notifications that were not typed, not typable, or where there was no isolate.

** Vaccine type unknown represents notifications for which multiple serotypes were obtained and the vaccine category could not be ascertained. Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS).

Figure 3. Monthly notifications of invasive pneumococcal disease in Tasmania in 2018 to 2023



Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS).

In 2023, over half of the cases were female (n = 21, 55%) and aged 65 years and older (n=23, 61%) (Table 2). Of the 37 cases with indigenous status available, none were Aboriginal and/or Torres Strait Islander.

Pneumococcal serotype was not known for four notifications (11%). Of the 34 notifications with a reported serotype, nine (35%) were due to serotypes contained in the 23vPPV only vaccine, 10 (38%) due to serotypes contained in the 13vPCV and 23vPPV vaccines, seven (27%) were non-vaccine serotypes, and eight (21%) were classified as 'vaccine type unknown' due to molecular typing identifying multiple serotypes (i.e. serotypes 11A or 11C, 15B or 15C, 22A or 22F, 7B or 7C, or 40). Notifications of IPD in Tasmania by age group and vaccine category of infecting serotype are presented in Table 2. The most commonly notified serotypes in 2023 were serotype 3 (n=5, 19%), 9N (n=4, 15%), 22F (n=3, 11%), and 19F (n=3, 11%). There were two notifications in serotypes 19A and 23A, and one each of serotype 10A, 16F, 24A, 33F, 35B, and 6C.

Table 2. Notifications of invasive pneumococcal disease in Tasmania by age group, and vaccine category of infecting serotype, 2023.

| Age group (years) | 13vPCV and 23vPPV serotype | 23vPPV only serotype | Non-vaccine serotype | Not typed* | Vaccine type unknown** | Total |
|-------------------|----------------------------|----------------------|----------------------|------------|------------------------|-----------|
| <1 | - | - | - | - | - | - |
| 1-4 | 1 | - | - | 1 | 1 | 3 |
| 5-14 | 2 | - | - | 1 | - | 3 |
| 15-24 | - | - | - | - | - | - |
| 25-49 | 1 | - | 2 | 1 | 1 | 5 |
| 50-64 | 3 | 1 | - | - | - | 4 |
| 65+ | 3 | 8 | 5 | 1 | 6 | 23 |
| Total | 10 | 9 | 7 | 4 | 8 | 38 |

The serotype of each notification is categorised according to their inclusion in the vaccine: serotypes included in both the 13-valent and 23-valent vaccine as 13vPCV and 23vPPV, those included in the 23-valent vaccine as 23vPPV only. Serotypes not included in a NIP vaccine are categorised as a non-vaccine serotype.

* Not typed represents notifications that were not typed, not typable, or where there was no isolate.

** Vaccine type unknown represents notifications for which multiple serotypes were obtained and the vaccine category could not be ascertained.

Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS).

Considering vaccination status, all three children aged under five years of age were fully vaccinated for their age. A serotype included in the 13vPCV vaccine was the cause of infection for one case who was fully vaccinated for age with this vaccine, and typing was not done for the other two cases.

In 2023, there were three reported deaths associated with IPD infection. One death in a person aged 50-64 years of age was due to IPD; the other two deaths, one in a case in the 65 years-old and over age group, and the other case in the 25–49-year-old age group, were due to other or unknown causes. From 2018 to 2022, all 11 deaths associated with IPD in Tasmania were in people aged 50 years.

Measles

Measles is a highly contagious viral respiratory infection that is acquired through breathing in respiratory droplets from an infectious individual. It typically begins with coryza, conjunctivitis, cough and fever, followed by a red blotchy rash on the face and neck. Complications may include ear infection, pneumonia and encephalitis.

Measles is now rare in Australia and all cases are associated with overseas travel or contact with a returned infectious traveller. Measles outbreaks can still occur, especially among children too young to be immunised or in non- or under-immunised people. Measles vaccination is recommended and funded under the NIP for children at 12 and 18 months of age. The State Government also currently funds free vaccination for anyone born during or after 1966 who does not have documented evidence of two measles containing vaccines, as well as infants aged six to under 12 months who are travelling overseas.

Measles in Tasmania 2023

There was one measles notification in a Tasmania resident in 2023. The case was aged 25–49-years-old and non-Indigenous. The case acquired infection overseas and was partially vaccinated for age. The measles genotype detected was B3, consistent with cases notified in 2018 and 2019.

Prior to 2023, the two most recent notifications of measles were in 2018 and 2019. Both cases likely acquired infection overseas and had an unknown vaccination status.

Mumps

Mumps is a viral infection transmitted by breathing in respiratory droplets and direct contact with saliva from an infected individual. Common symptoms include muscle aches, headache, tiredness, low appetite and fever, progressing to swelling of the salivary glands. Complications are rare but can be serious including swelling of the testes (orchitis), pancreatitis, hearing loss, encephalitis, meningitis and miscarriage.

Outbreaks do still occur in Australia in non- and under-immunised populations, most recently in remote Aboriginal and Torres Strait Islander communities. Mumps vaccination is recommended and funded on the NIP at 12 and 18 months of age.

Mumps in Tasmania 2023

There were two notifications of mumps in Tasmanian residents in 2023. Both cases were aged 25–49 years and were non-Indigenous. One case was fully vaccinated, and the other was unvaccinated.

Prior to 2023, the most recent notifications of mumps were in 2019.

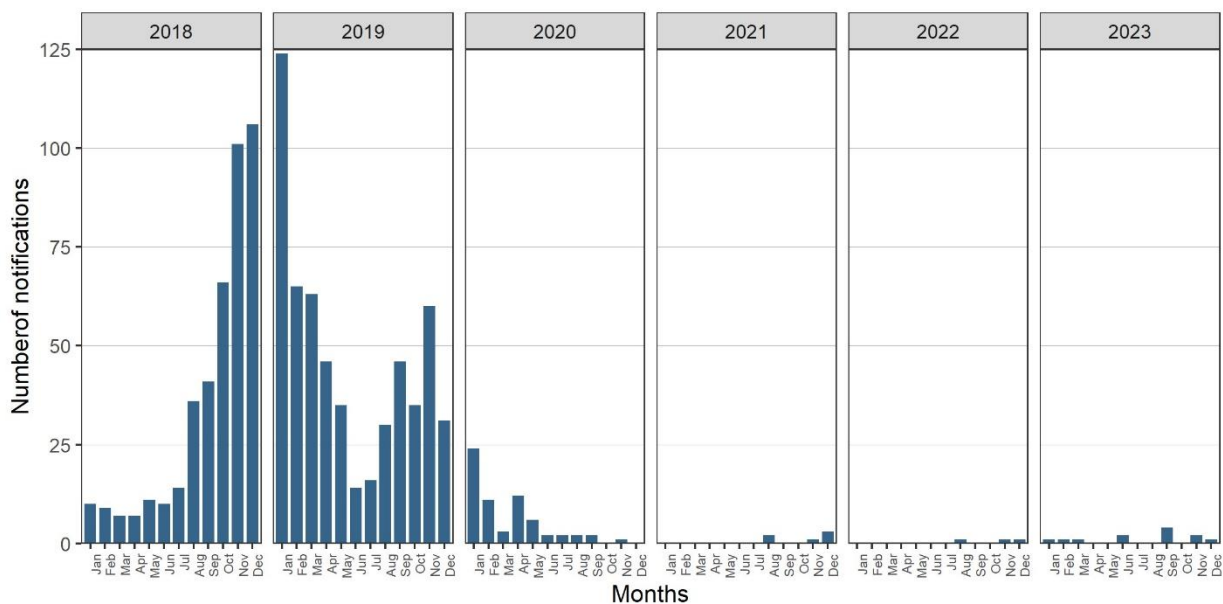
Pertussis (Whooping Cough)

Pertussis, also known as ‘whooping cough’, is a highly contagious respiratory infection caused by the bacterium *Bordetella pertussis*. Complications include pneumonia, seizures and encephalopathy and the disease can be fatal, most often in children under six months old. Cyclical outbreaks tend to occur every three to four years, even in vaccinated populations, due to waning of immunity from vaccination over time. A pertussis-containing vaccine is recommended and funded under the NIP for infants at six weeks, four months and six months of age, with booster doses at 18 months, four years and 12-13 years of age. Vaccination is also recommended in each pregnancy between 20- and 32-weeks gestation to protect the infant in their early months while they are too young to be vaccinated.

Pertussis in Tasmania 2023

There were 12 notifications of pertussis in Tasmanian residents in 2023, consistent with inter-epidemic activity. Pertussis notifications declined in mid-2020 and remained at low levels throughout 2021-2023 (Figure 4). The pertussis notification rate in Tasmania was 2.1 per 100 000 population, lower than the national notification rate of 9.1 per 100 000.

Figure 4. Notifications of pertussis in Tasmania by year and month, 2018 to 2023



Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS).

In 2023, the majority of cases (n=9) were in adults, consistent with the age distribution of cases in recent inter-epidemic years (Table 3). During epidemic years (2018 and 2019), almost half (49%) were in children aged 5 to 14 years (Table 3). In 2023, there were no cases reported in Aboriginal or Torres Strait Islander people. All cases were sporadic, with no epidemiologically linked cases. Two cases were hospitalised, and no deaths associated with pertussis were reported.

Table 3. Notifications of pertussis in Tasmania by year and age group, 2018 to 2023

| Age group (years) | Year | | | | | |
|-------------------|------------|------------|-----------|----------|----------|-----------|
| | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
| <1 | 4 | 12 | 1 | 0 | 0 | 0 |
| 1–4 | 19 | 69 | 12 | 0 | 0 | 0 |
| 5–14 | 245 | 241 | 18 | 0 | 0 | 2 |
| 15–24 | 32 | 66 | 2 | 0 | 0 | 1 |
| 25–49 | 64 | 104 | 23 | 5 | 1 | 2 |
| 50–64 | 39 | 51 | 7 | 0 | 1 | 3 |
| 65+ | 15 | 22 | 2 | 1 | 1 | 4 |
| Total | 418 | 565 | 65 | 6 | 3 | 12 |

Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS).

Polio

Notifications of poliovirus infection in Australia include both poliomyelitis (paralytic infection) and non-paralytic poliovirus infection. Infection occurs via the gastrointestinal system, usually transmitted from person to person by the faecal-oral route. The infection may progress to invade the lymph nodes and central nervous system. Ninety per cent of people with polio have no symptoms or a non-specific fever; 10% experience fever, malaise, headache, nausea and vomiting; less than 1% go on to experience severe muscle pain and paralysis. Infants and young children are most at risk.

Poliovirus infection is extremely rare, and Australia was certified free from wild poliovirus transmission by the World Health Organization in 2000. Despite global eradication programs, poliovirus continues to circulate in some countries and outbreaks still occur in non- or under-immunised populations. Poliovirus vaccination is recommended and funded under the NIP for children at six weeks, four months, six months, and four years of age.

Polio in Tasmania 2023

There were no notifications of polio in 2023. There have been no cases of polio reported in Tasmania since it became notifiable in 1991.

Rotavirus

Rotavirus infection is a viral illness transmitted via the faecal-oral route that can be a significant cause of severe gastroenteritis in infants and young children. Children aged six to 24 months are most at risk of severe disease, particularly Aboriginal and Torres Strait Islander children. Adult infection is most often asymptomatic and may contribute to transmission. Outbreaks can arise in childcare, aged care and hospital settings. Rotavirus became a notifiable disease in Tasmania in 2009.

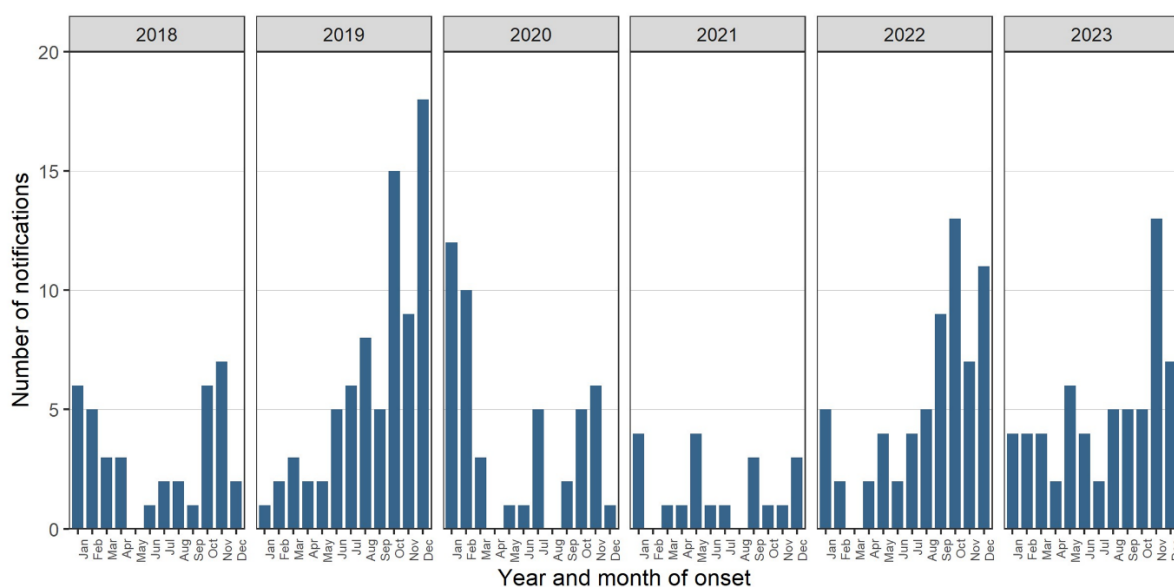
Two oral rotavirus vaccines were added to the NIP in July 2007, and are recommended for children 2 and 4 months of age.

Rotavirus in Tasmania 2023

There were 61 notifications of rotavirus in Tasmania residents in 2023. This was similar to 2022 (n=64) and the five-year (2018-2022) average (n=53). The rotavirus notification rate in Tasmania was 10.6 per 100 000 population, almost four times lower than the national notification rate of 38.9 per 100 000 population.

Rotavirus notifications have fluctuated since 2018, with a notable peak in 2019. Similar to previous years, monthly notifications were highest in the fourth quarter. However, in 2023 notifications were more evenly distributed throughout the year, which is unseasonal for rotavirus in temperate Australia when peak incidence is typically mid to late winter (Figure 5).

Figure 5. Notifications of rotavirus in Tasmania by year and month, 2018 to 2023



Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS).

Notifications were highest in children less than one year of age, which made up a quarter of notifications (n=15, 25%); 12 (80%) of these were probable cases and were likely not true cases but explained by recent vaccination. The overall incidence of disease was similar between males and females, but there was a higher proportion of male cases in the 1–4-year and 25–49-year-age

groups compared to females (Table 4). Of the cases with Aboriginal or Torres Strait Islander status recorded (n=25, 41%), all were non-indigenous.

While the two vaccines are highly effective against rotavirus infection, not all genotypes are covered by the vaccines and infection does occur in fully vaccinated individuals. Rotavirus infection may be due to various serotype/genotypes and doesn't necessarily reflect vaccine failure. Considering vaccination for age, all three confirmed cases less than 1 year of age were fully vaccinated. Among the 13 cases aged 1-4 years, all were fully vaccinated for their age. Among the six cases aged 5-14 years, five (83%) were fully vaccinated for their age, and one was not vaccinated (17%).

There were no outbreaks due to rotavirus notified in 2023.

Table 4. Notifications of rotavirus in Tasmania by sex and age group, 2023

| Age Group (years) | Male | | Female | | Total | |
|-------------------|-----------|------------|-----------|------------|-----------|------------|
| | Number | Percent | Number | Percent | Number | Percent |
| <1 | 9 | 26 | 6 | 23 | 15 | 25 |
| 1-4 | 10 | 29 | 3 | 12 | 13 | 21 |
| 5-14 | 2 | 6 | 4 | 15 | 6 | 10 |
| 15-24 | 3 | 9 | 3 | 12 | 6 | 10 |
| 25-49 | 7 | 20 | 1 | 4 | 8 | 13 |
| 50-64 | 2 | 6 | 1 | 4 | 3 | 5 |
| 65+ | 2 | 6 | 8 | 31 | 10 | 16 |
| Total | 35 | 100 | 26 | 100 | 61 | 100 |

Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS).

Rubella

Rubella, also known as 'German measles', is a viral respiratory infection. Rubella infection of the mother during pregnancy can be transmitted vertically to the foetus and can cause congenital rubella syndrome. Congenital abnormalities occur in up to 90% of infants born to women who had rubella during the first trimester of pregnancy and infection can also result in miscarriage and stillbirth.

Similar to measles, rubella is now rare in Australia, and both were certified to be eliminated in the country by the World Health Organisation in 2018. Rubella vaccination is recommended and funded under the NIP schedule at 12 and 18 months of age.

Rubella in Tasmania 2023

There were no notifications of rubella in 2023. The last case of rubella notified in Tasmania was in 2016.

Tetanus

Tetanus is a potentially life-threatening disease caused by a toxin produced by *Clostridium tetani*, a bacterium commonly found in the environment. Disease occurs when the organism enters the body through a break in the skin and may occur after injury to the skin that is contaminated with soil, dust or animal manure. Toxin produced by the bacteria attack the central nervous system causing muscle rigidity with painful spasms.

Tetanus is rare in Australia but can still occur in non-immunised people or adults vaccinated more than 10 years ago as immunity declines. Tetanus vaccination is recommended and funded on the NIP at six weeks, four months, six months, 18 months, 4 years, and 12-13 years of age.

Tetanus in Tasmania 2023

There were no notifications of tetanus in 2023. The last case of tetanus notified in Tasmania was in 2007.

Varicella (chickenpox and shingles)

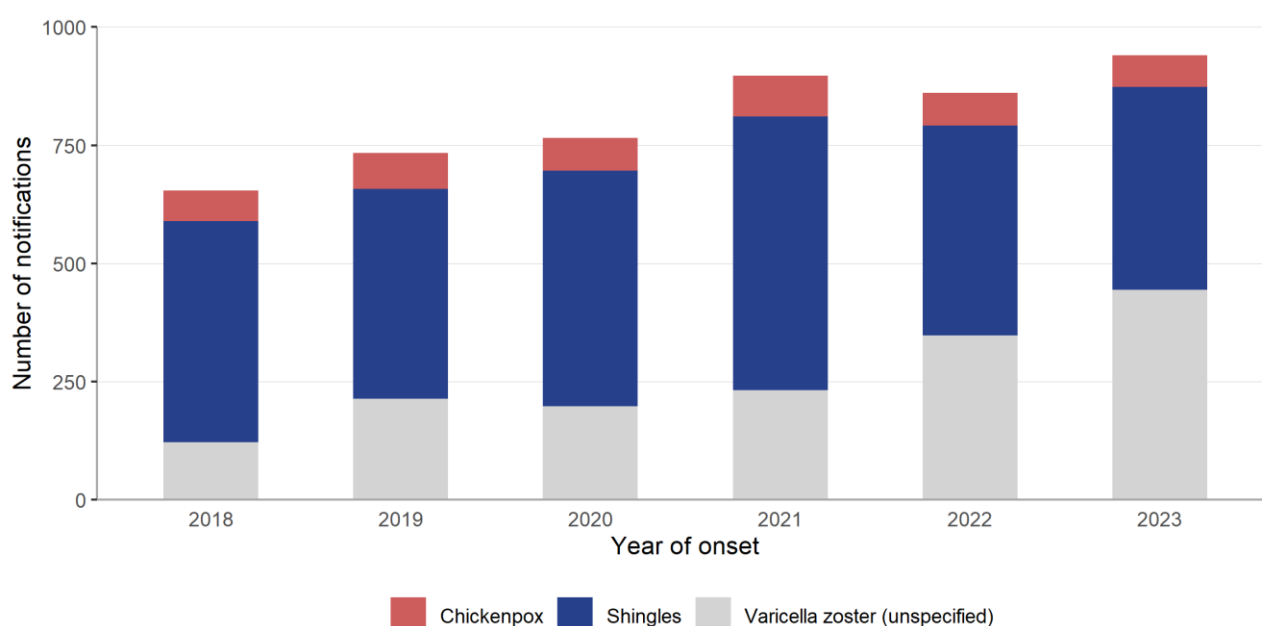
Varicella zoster virus (VZV) infections include chickenpox (primary varicella infection) and herpes zoster (shingles), following reactivation of latent virus. Chickenpox is a highly contagious infection with a characteristic rash and may be complicated by secondary bacterial skin infections, haemorrhagic complications, cerebellitis, encephalitis, and pneumonia.

Varicella infections are known to be underreported in Australia as many cases do not seek medical care or do not have laboratory tests performed. Furthermore, notified cases are often unable to be classified as either chickenpox or shingles due to a lack of clinical information and are reported as 'varicella zoster – unspecified'. A single dose of varicella containing vaccine is funded under the NIP at 18 months of age. A second dose of varicella containing vaccine is recommended for children up to 14 years of age, but not funded. From 1 November 2023, Shingrix was added to the NIP for adults aged 65 years and older, and adults aged 18 years and above with select immunocompromising conditions, to protect against zoster infection.

Varicella in Tasmania 2023

There were 935 notifications of varicella infection in Tasmania in 2023. Of these, 425 (45%) were shingles, 444 (48%) were 'varicella zoster – unspecified' infections, and 66 (7%) were chickenpox (Figure 6). In 2023, varicella notifications were 8.9% higher than 2022, with a decrease in both chickenpox and shingles notifications, but a relative increase in 'varicella zoster - unspecified' notifications (40% of total varicella notifications, compared to 19-29% of notifications between 2018 to 2022). This trend of increasing notifications of 'varicella zoster - unspecified' notifications has been observed since 2018 (Figure 6; Figure 7). The varicella notification rate in Tasmania was 163.1 per 100 000 population, less than the national rate of 192.7 per 100 000.

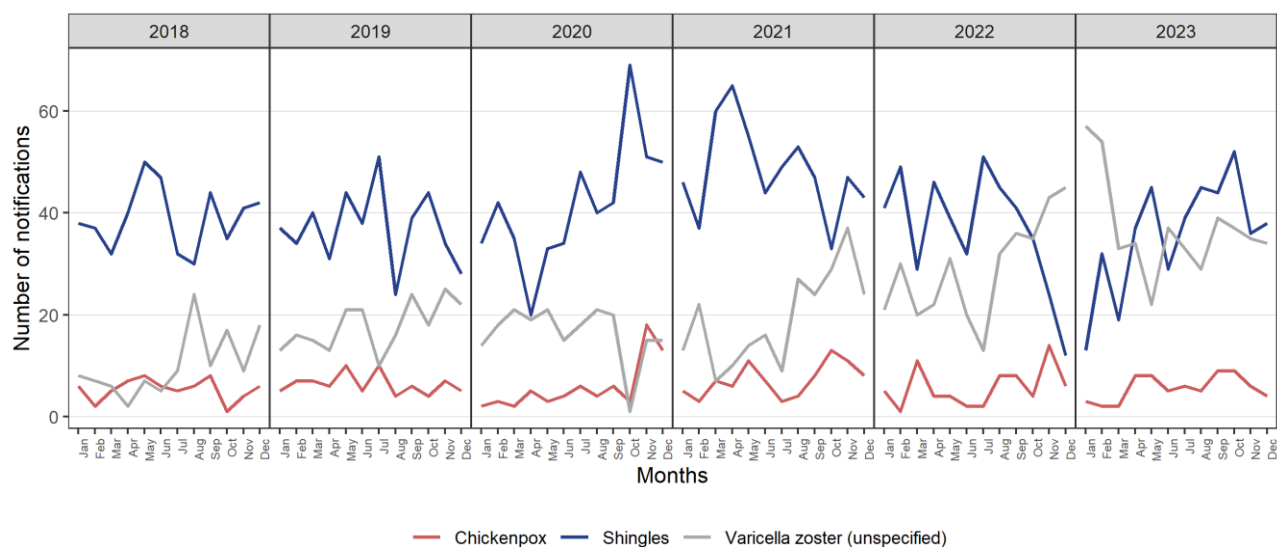
Figure 6. Notifications of varicella infection in Tasmania, by infection type and year, 2018 to 2023



Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS).

The monthly distribution of varicella cases shows no clear seasonal pattern in varicella notifications (Figure 7).

Figure 7. Monthly notifications of varicella infection in Tasmania, by infection type and year, 2018 to 2023



Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS).

In 2023, the proportion of male and female cases was similar overall (45% vs. 55%, respectively) and for each type of varicella classification. The majority of shingles notifications (n=282, 66%) were in people aged over 50 years (rate of 174.2 per 100 000 in this age group) (Table 5). The majority of chickenpox notifications were in children under 15 years of age (n=29), representing 44% of all chickenpox notifications (Table 5). The majority of these cases received at least one varicella-containing vaccine (n=19, 66%) or were not vaccinated (n=5, 17%). The remaining children were not yet eligible for the vaccine based on their age (n=2, 7%) or had an unknown vaccination status (n=3, 10%).

Of cases with Indigenous status reported (n=448, 48%), the majority (n=437, 98%) were non-Indigenous and 11 cases (2%) were Aboriginal and/or Torres Strait Islander.

Table 5. Notifications of varicella in Tasmania by clinical presentation and age group, 2023

| Age Group (years) | Chickenpox | Shingles | Varicella zoster - unspecified | Total |
|--------------------------|-------------------|-----------------|---------------------------------------|--------------|
| <1 | 2 | 0 | 2 | 4 |
| 1 – 4 | 7 | 1 | 2 | 10 |
| 5 - 14 | 20 | 4 | 32 | 56 |
| 15 - 24 | 19 | 12 | 32 | 63 |
| 25 - 49 | 14 | 126 | 127 | 267 |
| 50 - 64 | 3 | 130 | 97 | 230 |
| 65+ | 1 | 152 | 152 | 305 |
| Total | 66 | 425 | 444 | 935 |

Source: Tasmanian Notifiable Diseases Surveillance System (TNDSS)

Appendix 1: Notification counts and rates of vaccine-preventable diseases in Tasmania and Australia

Table A1. Notifications and rates of notifiable vaccine preventable diseases in Tasmania and Australia, 2023

| Disease | Tasmania | | Australia | |
|-----------------------------------------------|--------------------|------------|--------------------|--------------------|
| | 2023 notifications | 2023 rate* | 2023 notifications | 2023 rate* |
| Diphtheria | 0 | 0 | 12 | <0.1 |
| Invasive <i>Haemophilus influenzae</i> type b | 0 | 0 | 12 | <0.1 |
| Measles | 1 | <0.5 | 26 | 0.1 |
| Invasive meningococcal disease | 5 | 0.9 | 143 | 0.5 |
| Mumps | 2 | <0.5 | 131 | 0.5 |
| Pertussis | 12 | 2.1 | 2 447 | 9.1 |
| Invasive pneumococcal disease | 38 | 6.6 | 2 265 | 8.4 |
| Poliovirus | 0 | 0 | 0 | 0 |
| Rotavirus | 61 | 10.6 | 8 444 | 38.9 |
| Rubella | 0 | 0 | 3 | <0.1 |
| Tetanus | 0 | 0 | 4 | <0.1 |
| Varicella | 935 | 163.1 | 34 529 | 192.7 [^] |

* Notification rate per 100 000 population.

[^]Varicella is not notifiable in NSW. To calculate the national notification rate, the NSW population was excluded from the Australian population.

Sources: Tasmanian Notifiable Disease Surveillance System (TNDSS), National Notifiable Diseases Surveillance System (NNDSS), Australian Bureau of Statistics estimated resident population (Jun 2023).

Appendix 2: Pneumococcal serotypes targeted by vaccines included on the National Immunisation Program

Table A2. Pneumococcal serotypes targeted by vaccines included on the National Immunisation Program in 2023

| Vaccine type | Serotypes targeted by the vaccine |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 13vPCV (13-valent pneumococcal conjugate vaccine) | 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F and 23F |
| 23vPPV (23-valent pneumococcal polysaccharide vaccine) | 1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F and 33F |



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