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He Pūtaiao, He Tāngata

INVASIVE PNEUMOCOCCAL DISEASE MID-YEAR BIANNUAL REPORT: July 2023 to June 2024

Prepared as part of a Ministry of Health contract for scientific services

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DISCLAIMER

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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KEY FINDINGS

This report describes the epidemiology of Invasive pneumococcal disease (IPD) in New Zealand for the year 1 July 2023 – 30 June 2024 (2023/24). The analyses are based on IPD notifications in the EpiSurv database, as well as information from the national immunisation register (Aotearoa Immunisation Register—AIR).

- There were 737 cases of IPD notified in New Zealand (14.1 cases per 100,000).
- The incidence of IPD has been increasing steadily since 2020/21, and in 2023/24 the IPD incidence rate was the highest observed in the past 11 years.
- The incidence of IPD among adults aged ≥65 years has increased compared with 2022/23 (from 30.8 to 34.3 per 100,000) and this age group now experiences the highest rate of IPD.
- The incidence of IPD among children aged <2 years more than halved in 2023/24 compared to 2022/23 (from 52.2 to 22.4 per 100,000). The rate is now similar to 2019/20 but remains high compared to 2018/19 (14.7 cases per 100,000).
- The incidence of IPD among 2- to 4-year-olds also decreased in 2023/24 (from 24.8 to 18.2 per 100,000).
- Māori and Pacific peoples continue to experience substantially higher rates of IPD than those of European/Other/MELAA and Asian ethnicities.
- Serotype 19A remains the most common serotype, followed by serotype 8 and then serotype 3. Serotypes 19A and 3 are included in the PCV13 vaccine and cases due to these serotypes declined among children <2 years in 2023/24, following the re-introduction of PCV13 to the childhood schedule in late 2022. Cases due to serotype 19A increased among people aged 5 years and older. Cases due to serotypes included in PCV7 and PCV10 accounted for 3.4% of typed cases in 2023/24.
- Serotypes included in PCV13 continue to cause disease among unvaccinated children as well as children who received PCV10 as part of their routine immunisations. Potentially vaccine-preventable serotypes included in PCV13 were responsible for the majority (58.5%) of IPD cases in children aged 6 weeks to 4 years (where typing was undertaken). A further 19.5% were due to serotypes covered by PCV vaccines not available in New Zealand (i.e PCV15 or PCV20).The remaining 22% were due to serotypes not included in any pneumococcal conjugate vaccine in production in 2023/24.

The reduction in incidence of IPD and the decrease in serotype 19A in young children in New Zealand in 2023/24 demonstrates the impact of the re-introduction of PCV13 to the childhood immunisation schedule in the first 18 months since this change. Incidence of IPD caused by serotype 19A more than halved among children <2 years from 2022/23 to 2023/24. Further reductions in incidence are anticipated as more children receive PCV13 as part of their routine immunisations.

IPD incidence in those aged ≥65 increased further in 2023/24, largely due to increases in serotype 19A. As with previous PCV vaccine introductions, the change in the childhood vaccine schedule is expected, over time, to have an indirect impact in these older age groups.

Given the recent changes to the vaccine programme, the phenomenon of serotype replacement and the availability and development of new vaccines, it is important to continually monitor trends in IPD epidemiology to inform future vaccine decisions. One area that requires particular attention is the monitoring of the incidence of serotype 8 and other serotypes not covered by current vaccines. It is also important to monitor trends in age and ethnic groups where there are clear disparities.

In addition to the changes in the PCV immunisation programme over time, there has been a decline in childhood immunisation coverage in New Zealand and increasing disparities in immunisation coverage. To further reduce the incidence of IPD in New Zealand and the inequities in incidence, it is important that immunisation coverage is increased with a focus on improving equitable coverage.

It is also important to note that not all IPD is vaccine-preventable and prevention efforts should extend to addressing systemic and healthcare access issues that may contribute to the spread of *S. pneumoniae*.

INTRODUCTION

Invasive pneumococcal disease (IPD) refers to disease due to *Streptococcus pneumoniae* (*S. pneumoniae*) entering a sterile site, such as blood, pleural fluid, or cerebrospinal fluid. IPD represents the most severe end of the disease spectrum caused by this bacterium. The most common clinical presentations in IPD are bacteraemic pneumonia, non-localised bacteraemia (bacteraemia without focus), and meningitis. Older adults generally have bacteraemic pneumonia, while young children may have any of the three clinical presentations, with meningitis being the most severe.

S. pneumoniae can also cause non-invasive infections such acute otitis media (predominantly in children) and sinusitis (predominantly older children and adults). Non-invasive *S. pneumoniae* infections are not notifiable and are not discussed in this report.

IPD is largely a vaccine preventable disease with vaccines available that provide protection against different serotypes of the bacterium. A pneumococcal vaccine has been part of the New Zealand childhood immunisation schedule since 2008. The history of the pneumococcal vaccine programme in New Zealand is summarised in Table 1 [1].

Table 1. Pneumococcal conjugate vaccine history in New Zealand

Date	Vaccination schedule change
2006	PCV7 and 23PPV introduced for high-risk individuals.
2008	PCV7 introduced to the Schedule at ages 6 weeks, 3 months, 5 months and 15 months.
2011	PCV10 replaced PCV7 on the Schedule. PCV13 replaced PCV7 for high-risk children.
2014	PCV13 replaced PCV10 on the Schedule.
2015	PCV13 became available for patients of any age with certain high-risk conditions.
2017	PCV10 replaced PCV13 on the Schedule. PCV13 and 23PPV continues for high-risk individuals
2020	PCV10 recommended as a 2-dose primary schedule plus booster dose given at 6 weeks, 5 months and 12 months. PCV13 remained at 3-dose schedule plus booster for high-risk infants (i.e. given at ages 6 weeks, 3, 5 and 12 months)
2022	PCV13 replaced PCV10 in a 2-dose primary schedule plus booster dose on 1 December. PCV13 remained at 3-dose schedule plus booster for high-risk infants (i.e. given at ages 6 weeks, 3, 5 and 12 months)

PCV13 is the currently funded vaccine on the childhood immunisation schedule. Two doses of PCV13 are given as the primary course, at 6 weeks and 5 months, with a booster at age 12 months. Children who started their immunisation course with PCV10 prior to December 2022 can complete it with PCV13. PCV13 is not funded for those who have previously been fully vaccinated with PCV10. In addition, PCV13 and 23 PPV are available for vaccination and re-vaccination for people of any age with eligible conditions that affect the immune system [1].

This report provides an overview of the epidemiology of IPD for 2023/24. It also presents trends from 2013/14. This will be the final biannual report in this series. This report will be replaced by a monthly online dashboard along with and annual IPD report. The dashboard and reports are available here.

METHODS

The case data presented in this report are based on the information recorded on EpiSurv, the national notifiable disease surveillance system, as of 20 July 2024. Any updates made to EpiSurv data by public health service staff after this date will not be reflected in this report. Episurv data are supplemented with serotype data from the ESR national laboratory-based surveillance of invasive *S. pneumoniae* isolates. The immunisation status of cases that were eligible for PCV vaccination was extracted from AIR.

IPD CASE DEFINITION

IPD has been a notifiable disease since 2008. A confirmed case is one that has a clinically compatible illness that is laboratory confirmed. Most cases present with either meningitis, pneumonia, or septicaemia. Laboratory confirmation requires at least one of the following [2]:

- isolation of *S. pneumoniae* from blood, cerebrospinal fluid (CSF) or another normally sterile site (eg. joint fluid, pleural fluid)
- detection of *S. pneumoniae* nucleic acid from blood, CSF or another normally sterile site
- a positive *S. pneumoniae* antigen test on CSF or pleural fluid.

Pleural fluid was added in 2016 as a sterile site. [2] As a result, this addition may have slightly increased the total number of IPD cases identified after that date relative to previous years.

CALCULATION OF POPULATION RATES

All rates presented in this report are crude rates.

The 2013–2023 mid-year population estimates published by Statistics New Zealand were used to calculate the incidence rates for total population.

All rates are presented as the number of cases per 100,000 population. Rates have not been reported where there were fewer than five cases in any category as this produces unstable rates.

ETHNICITY

Prioritised ethnicity is used in this report. Ethnicity is prioritised in the following order: Māori, Pacific peoples, Asian, and European/Other. The European/Other group includes people identifying as Middle Eastern, Latin American or African (MELAA) as case numbers for this group were very small. For more detail on classification refer to the Ministry of Health ethnicity data protocols [3].

The incidence rates for ethnic groups were calculated by applying the usually resident 2018 census population ethnic proportions to the 2017–2023 mid-year population estimates.

SOCIO-ECONOMIC DEPRIVATION

The New Zealand index of deprivation 2018 (NZDep2018) is used to measure socioeconomic deprivation. NZDep2018 is derived from a weighted combination of nine variables from the 2018 census, each reflecting a different aspect of material and socioeconomic deprivation [4]. The deprivation score is calculated for each geographical mesh block in New Zealand.

This report presents NZDep2018 by quintiles, where 1 represents the least socioeconomically deprived areas and 5 the most socioeconomically deprived areas.

The denominator data used to determine disease rates for NZDep2018 categories is based on the proportion of people in each NZDep2018 category from the usually resident 2018 census population.

TRENDS

Trend data are presented for 12-month periods from 1 July to 30 June each year.

INVASIVE PNEUMOCOCCAL DISEASE IN NEW ZEALAND

There were 737 cases of IPD notified in New Zealand in 2023/24 (14.1 cases per 100,000). The age group and ethnicity of the cases is presented in Table 2. (Table 2 and Figure 1).

Table 2. IPD cases by age group (years) and ethnicity

Age group	Māori	Pacific	Asian	European/ Other	Unknown	Total
<2	10	5	2	9	1	27
2-4	9	5	8	8	3	33
5-14	12	8	13	9	1	43
15-29	14	12	4	14	1	45
30-49	41	29	13	46	2	131
50-64	58	19	11	74	0	162
65+	45	32	13	201	5	296
Total	**189**	**110**	**64**	**361**	**13**	**737**

Figure 1 shows the incidence of IPD from 2013/2014 to 2023/24 for the total population. The incidence of IPD has been increasing steadily since 2020/21 with the incidence in 2023/24 the highest it has been in the past 11 years.

Figure 1. Incidence of invasive pneumococcal disease in New Zealand, rate per 100,000, 2013/14 to 2023/24

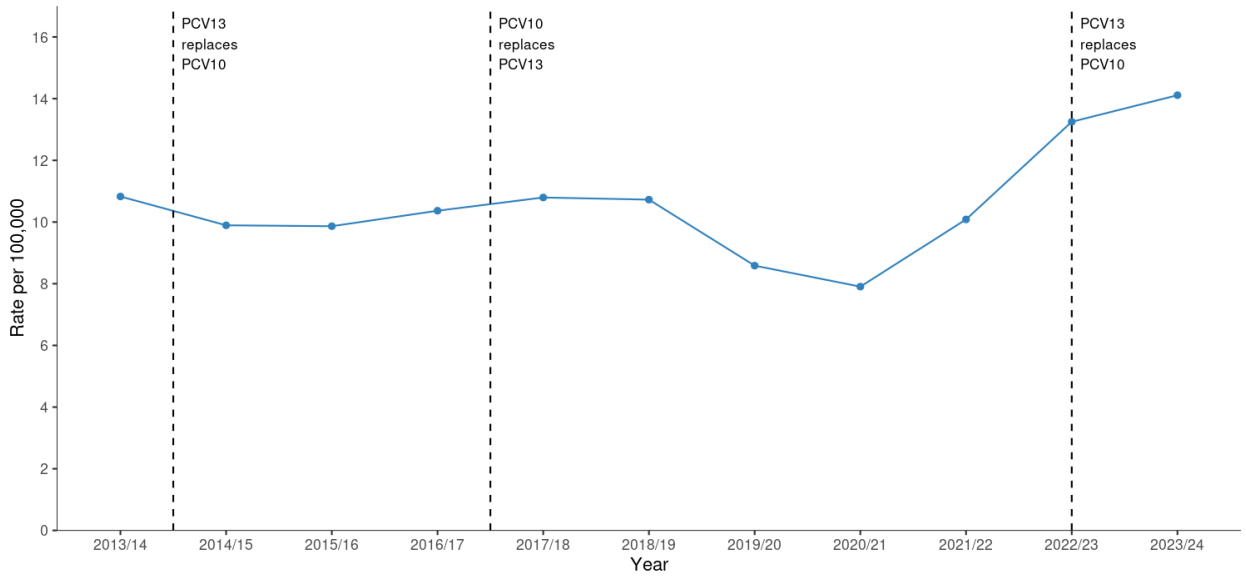


Figure 2 shows IPD trends over time by age group. The incidence for those aged <2 years more than halved from 52.2 per 100,000 in 2022/23 to 22.4 per 100,000 in 2023/24, and this age group no longer has the highest age-specific incidence. Incidence also decreased among children 2 to 4 years old from 24.8 per 100,000 in 2022/23 to 18.2 per 100,000 in 2023/24.

Incidence increased for older age groups. Those aged ≥65 years have the highest incidence in 2023/24 (34.3 per 100,000).

Figure 2. Incidence of invasive pneumococcal by age group, rate per 100,000, 2014/15 to 2023/24

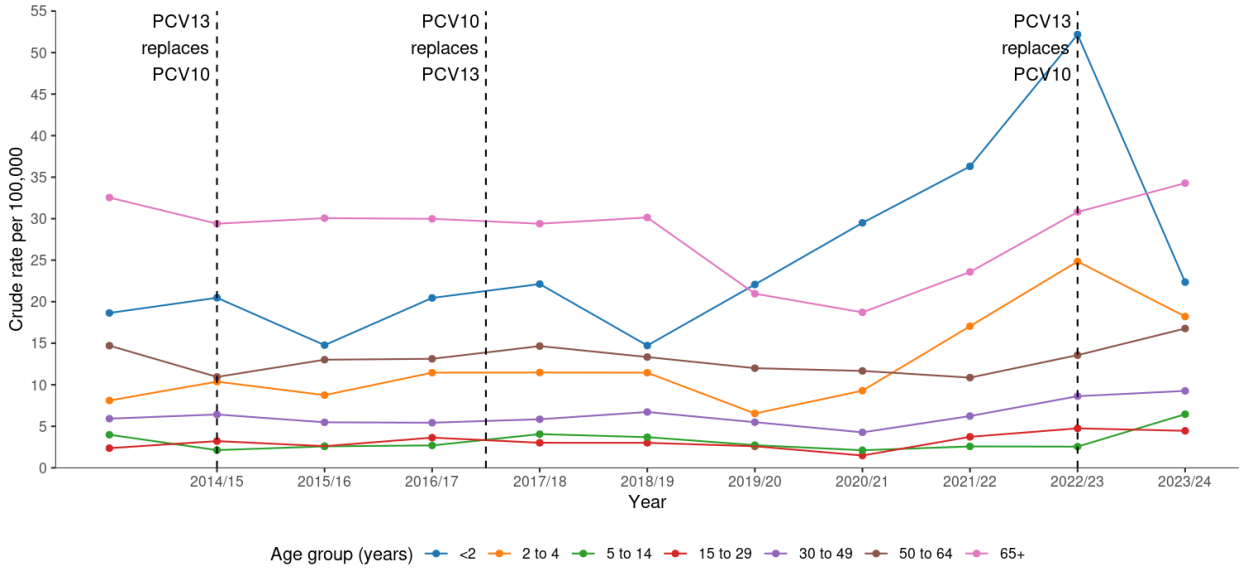


Figure 3 shows the cumulative number of IPD cases per year from 2019 to June 2024. Case numbers in 2024 are similar to the same time in 2023, and higher than the same time in 2019-2022. Figure 4 shows that this is driven by increased case numbers among people >5 years old. Case numbers among those aged <2 years and 2 to 4 years are lower in 2024 than the same time in 2022 and 2023 (Figure 4).

Figure 3. Cumulative number of invasive pneumococcal disease cases per year, January 2019 - June 2024

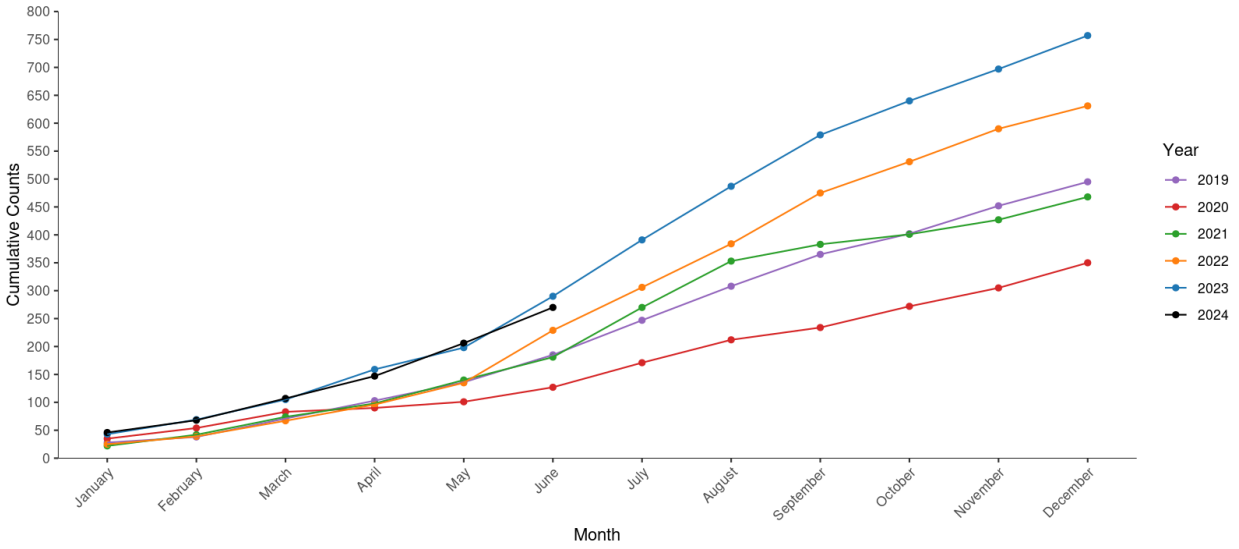
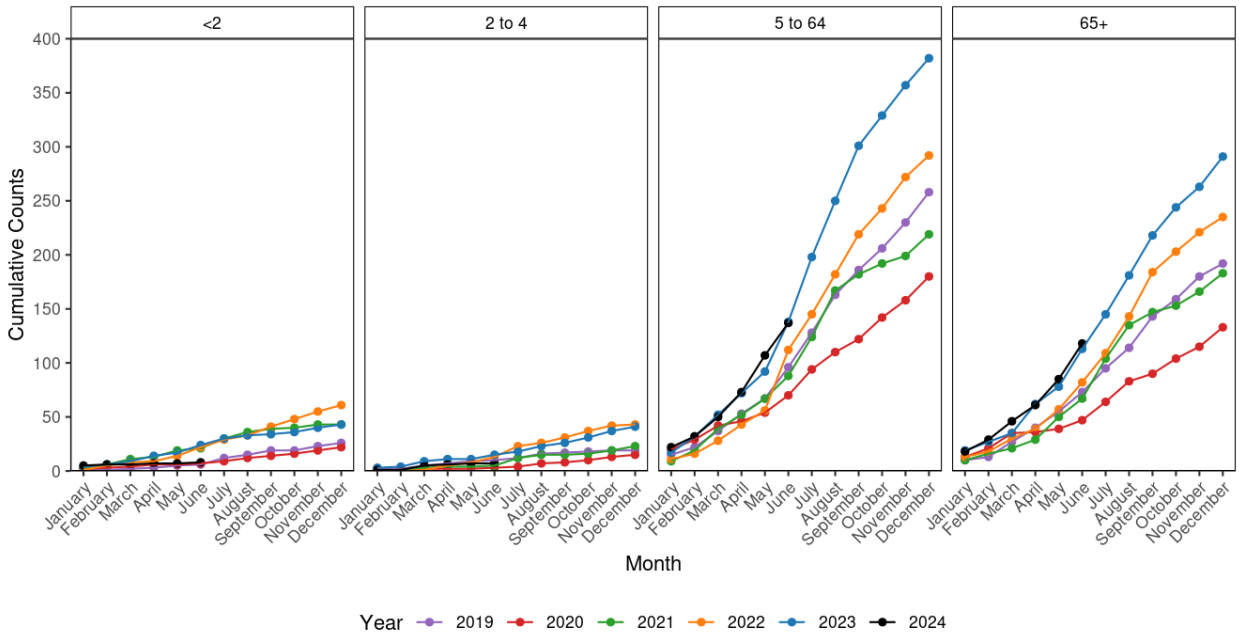
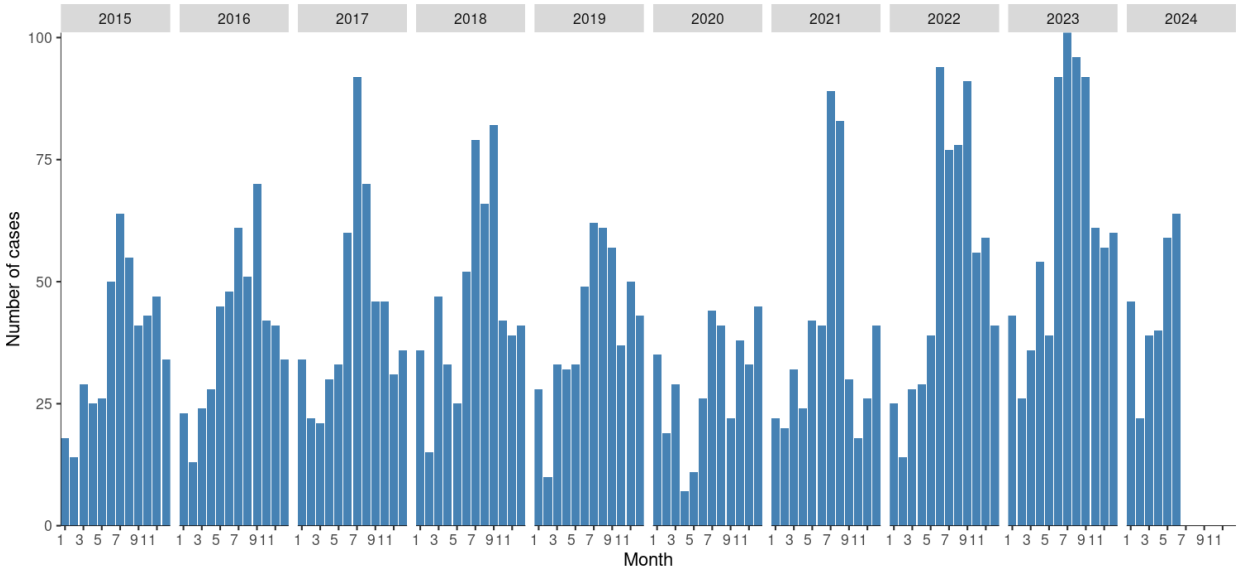


Figure 4. Cumulative number of invasive pneumococcal disease cases per year by age group, January 2019 – June 2024



IPD follows a seasonal pattern with the highest numbers seen in the winter and early spring months each year. Case numbers in July 2023 were the highest for any month over the period January 2015 to June 2024. (Figure 5)

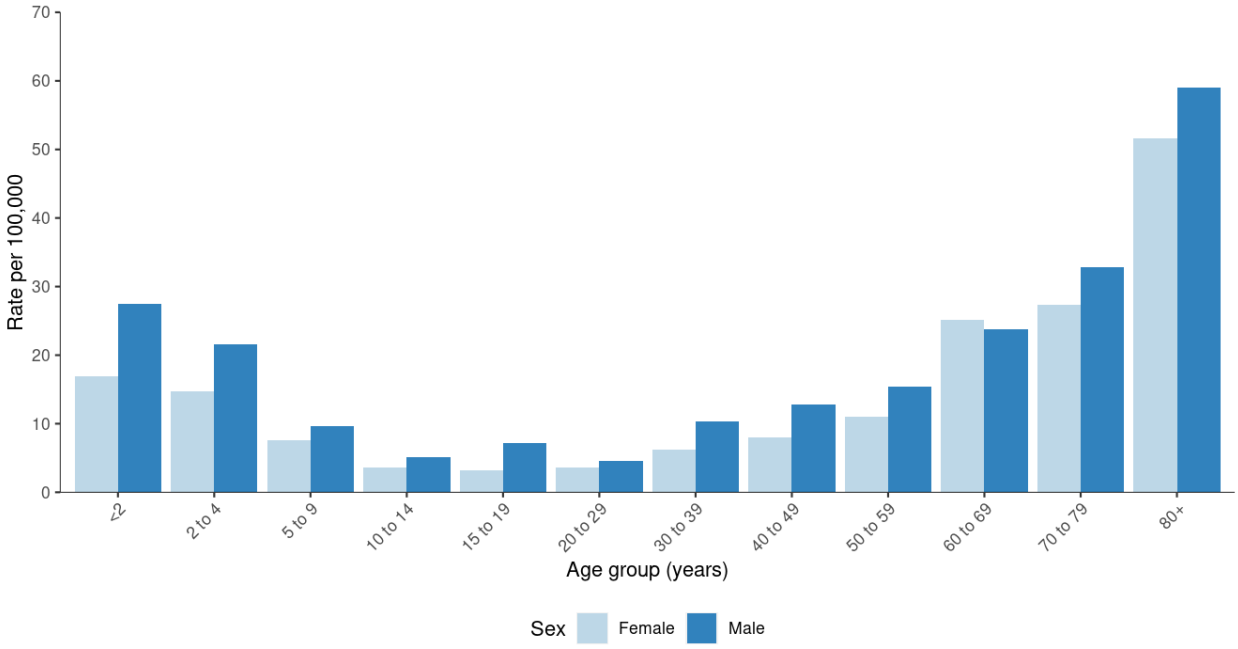
Figure 5. Number of cases of invasive pneumococcal disease by month and year, 2015 - June 2024



INCIDENCE OF INVASIVE PNEUMOCOCCAL DISEASE BY AGE GROUP AND SEX

The incidence of IPD follows a U-shaped distribution by age (Figure 6). In 2023, adults ≥80 and infants <2 years had the highest incidence of IPD (34.3 per 100,000 and 22.4 per 100,000 respectively). Males aged ≥80 had the highest rate of IPD (59.0 per 100,000), followed by females aged ≥80 (51.6 per 100,000), then males aged <2 years (27.5 per 100,000) (Figure 6). This U-shaped distribution has also been seen in previous years.

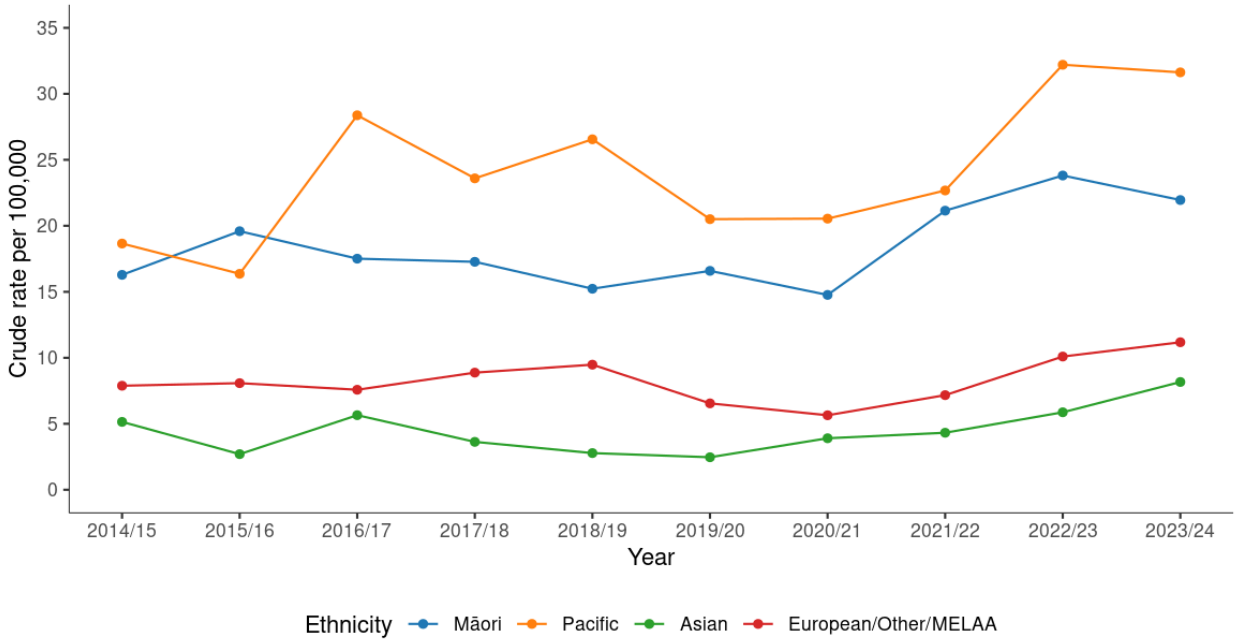
Figure 6. Incidence of invasive pneumococcal disease by age group and sex, rate per 100,000, 2023/24



INVASIVE PNEUMOCOCCAL DISEASE BY ETHNIC GROUP

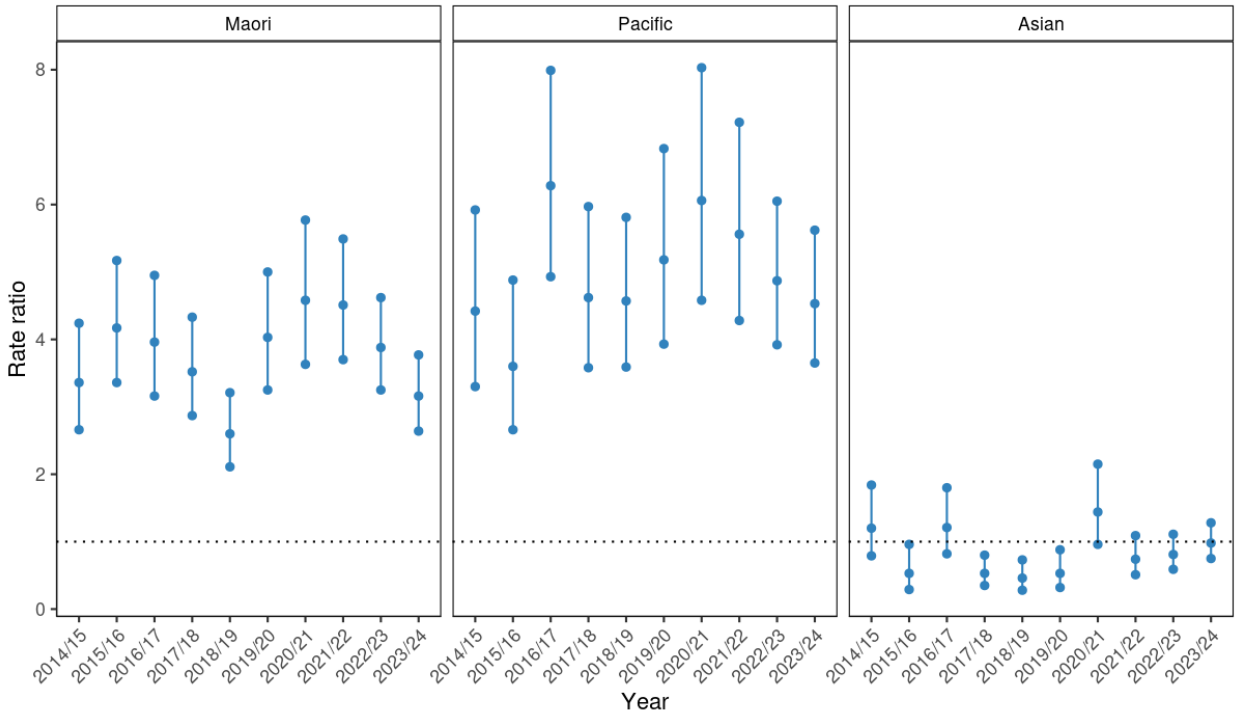
Pacific peoples consistently experience the highest crude rates of IPD, followed by Māori (Figure 7). Between 2021/2022 and 2023/24, rates increased for Pacific peoples, Asian and European/Other, and remained similar overall for Māori (Figure 7).

Figure 7. Incidence of invasive pneumococcal disease by prioritised ethnicity, rate per 100,000, 2014/15 to 2023/24



In 2023/24, Māori and Pacific people had 3.1 and 4.5 times, respectively, the incidence rate of IPD compared to European/Other after adjusting for age (Figure 8).

Figure 8. Invasive pneumococcal disease - rate ratios and 95 % confidence intervals by ethnicity and year, adjusted by age (reference group European/Other)



[i]

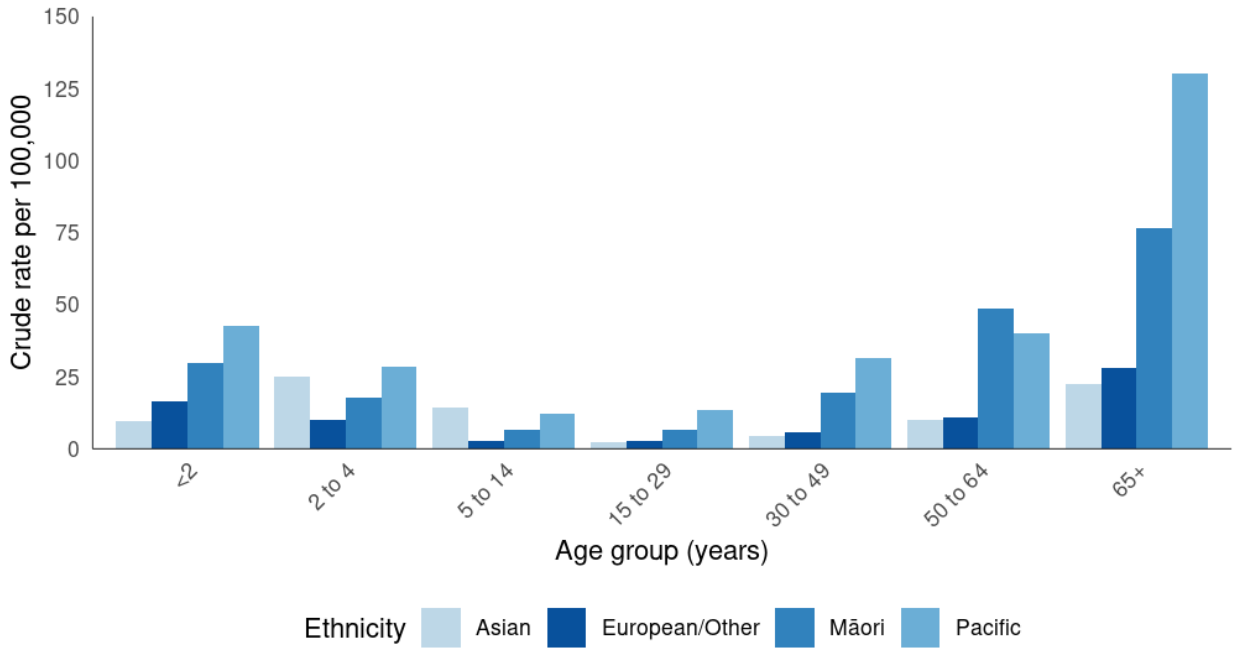
[i] The age-standardised rates are direct-standardised to the age distribution of the total New Zealand population.

Māori and Pacific people experience higher rates of IPD across most age groups (Figure 9). In 2023/24 Pacific adults aged ≥65 years, followed by Māori adults aged ≥65 years, had the highest rate of IPD, followed by Māori adults aged 50 to 64 years and Pacific children aged <2 years.

Among those aged ≥65 years, Māori (76.7 per 100,000) and Pacific people (130.2 per 100,000) have 2.8 and 4.7 times, respectively the incidence of IPD among European/Other (27.6 per 100,000). Among those aged 30 to49 years, Māori (19.4 per 100,000) and Pacific peoples (31.4 per 100,000) had 3.5 and 5.6 times, respectively, the rate of IPD among European/Other (5.6 per 100,000). Among those aged 50 to 64, Māori (48.8 per 100,000) and Pacific peoples (40.2 per 100,000) had 4.6 and 3.8 times, respectively, the rate of IPD among European/Other (10.7 per 100,000).

Among children aged <2 years, Māori and Pacific had 1.8 and 2.6 times, respectively, the incidence seen in European/Other children.

Figure 9. Incidence of invasive pneumococcal rates by ethnicity, rate per 100,000, 2023/24



INVASIVE PNEUMOCOCCAL DISEASE BY REGION

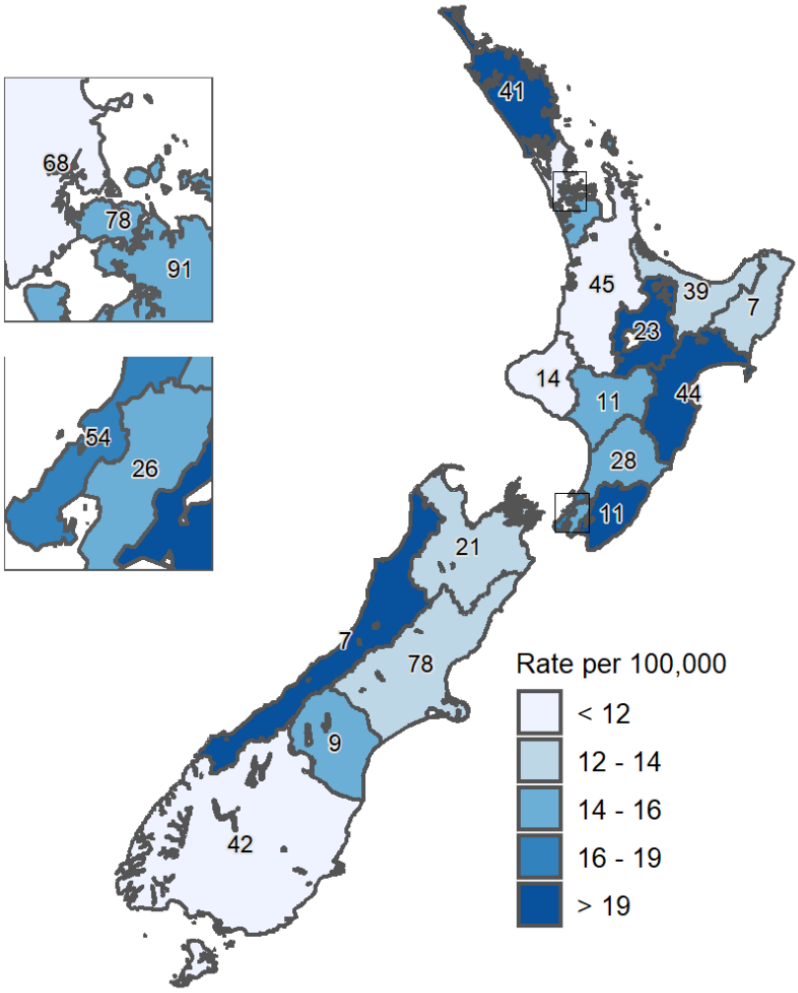
The Central region had the highest overall IPD incidence in 2023/24, followed by Northern, Te Waipounamu, and Te Manawa Taki (Table 3).

Table 3. Invasive pneumococcal disease by region and age group, case numbers and rate per 100,000, 2023/24

Region	<2 years		2–4 years		5–64 years		≥65 years		Total	
	n	Rate	n	Rate	n	Rate	n	Rate	n	Rate
Northern	13	27.5	20	28.2	151	9.6	94	33.7	278	14.1
Te Manawa Taki	3	11.51	5	12.8	69	8.8	51	26.7	128	12.3
Central	6	27.4	4	12.2	93	12.2	71	42.1	174	17.6
Te Waipounamu	5	19.6	4	10.5	68	7.3	80	35.7	157	12.8
Total	27	22.4	33	18.2	381	9.4	296	34.3	737	13.9

Figure 10 provides further detail on the incidence of IPD in 2023 across New Zealand by district. The districts with the highest incidence of IPD in 2023/24 were Hawke's Bay (23.8 per 100,000), Wairarapa (21.5 per 100,000), West Coast (21.3 per 100,000), Northland (20.1 per 100,000) and Lakes (19.1 per 100,000).

Figure 10. Geographic distribution of invasive pneumococcal disease cases, rates per 100,000, 2023/24



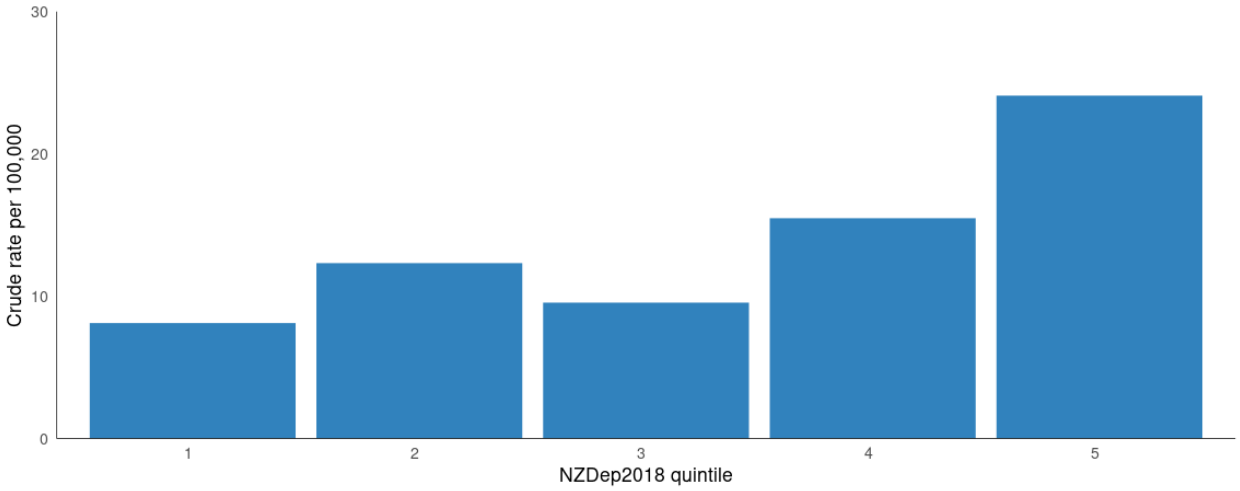
Numbers represent notification count in district.

INVASIVE PNEUMOCOCCAL DISEASE BY DEPRIVATION

The NZDep 2018 quintile could be assigned for 708 of 737 cases (96.1%) in 2023/24.

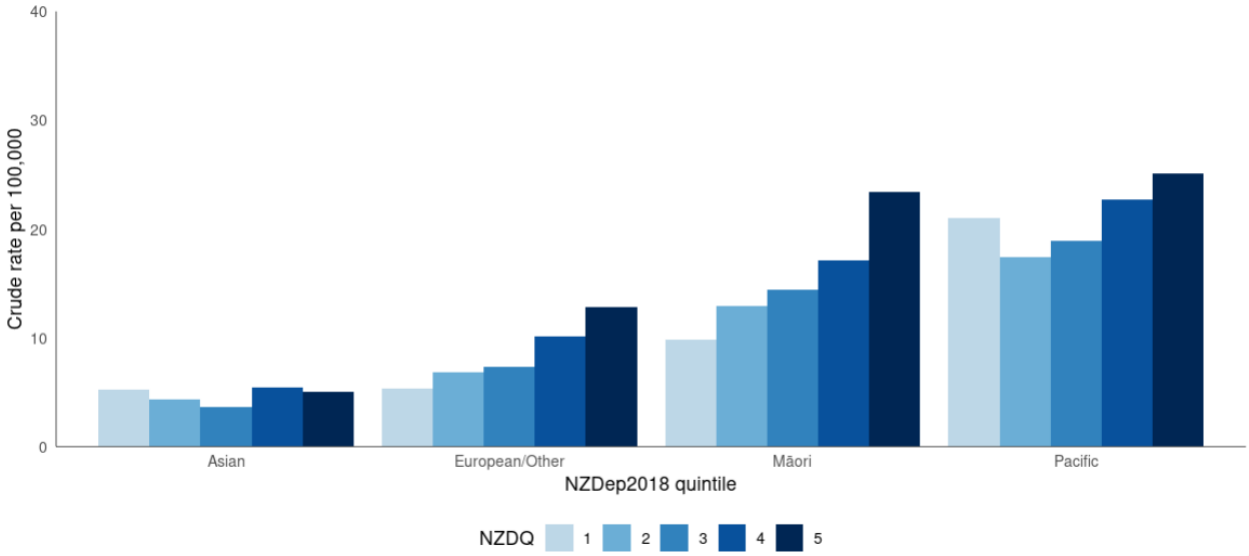
The total population rate for 2023/24 shows a clear trend by NZDep2018 quintiles, with quintile 5 experiencing the highest rate (25.0 per 100,000) and quintile 1 experiencing the lowest (8.0 per 100,000). 58.2% of cases (412/708) were in the most deprived quintiles 4 and 5 (Figure 11).

Figure 11. Incidence of invasive pneumococcal disease cases by NZDep2018 quintile, rate per 100,000, 2023/24



For the five years from 2019/20 to 2023/24, Pacific peoples residing in an area of the highest deprivation (quintile 5) had the highest rate of IPD (25.1 per 100,000), followed by Māori residing in an area of the highest deprivation (quintile 5) (23.4 per 100,000) (Figure 12). Crude incidence rates are higher at all levels of deprivation for Pacific peoples compared to European/Other and Asian ethnic groups.

Figure 12. IPD rates by ethnicity and NZDep2018 (quintiles), 2019/20–2023/24



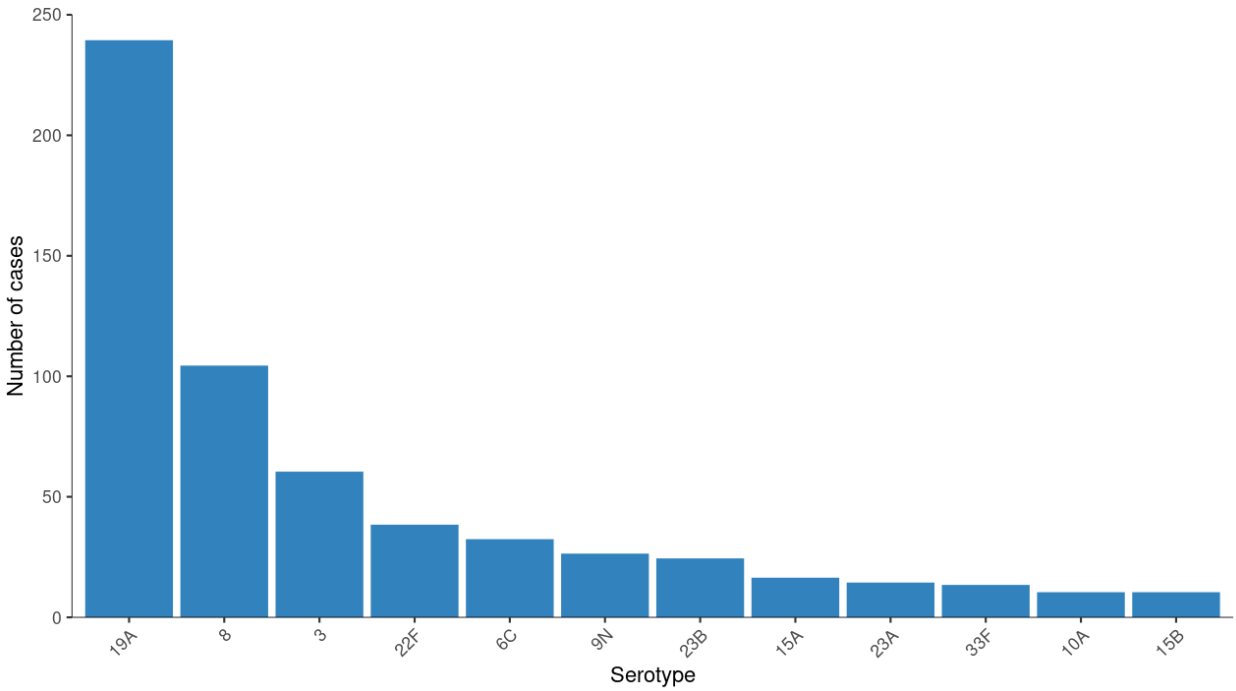
INVASIVE PNEUMOCOCCAL DISEASE BY SEROTYPE

There are over 90 serotypes of *S. pneumoniae* that cause disease.

A serotype was identified in 685 (92.9%) of IPD cases in 2023/24. Figure 13 shows the most common serotypes causing IPD in New Zealand over this time. Serotype 19A was the most common serotype (34.9%), followed by serotype 8 (15.2%) and serotype 3 (8.8%). Serotypes 19A and 3 are included in PCV13; serotype 8 is included in PCV20 (not available in New Zealand in 2023/24).

The proportion of IPD cases due to serotypes included in PCV10 have declined over the past decade. In the year prior to the introduction of PCV10 to the childhood schedule in 2011, 57% (295/514) of typed IPD cases were caused by serotypes included in PCV10. In 2023/24, 3.4% of cases where a serotype was identified (23/685) were caused by serotypes contained in PCV10 (of which 69.6% (16/22) were caused by serotypes contained in PCV7). All but one case occurred in people aged 5 years and older.

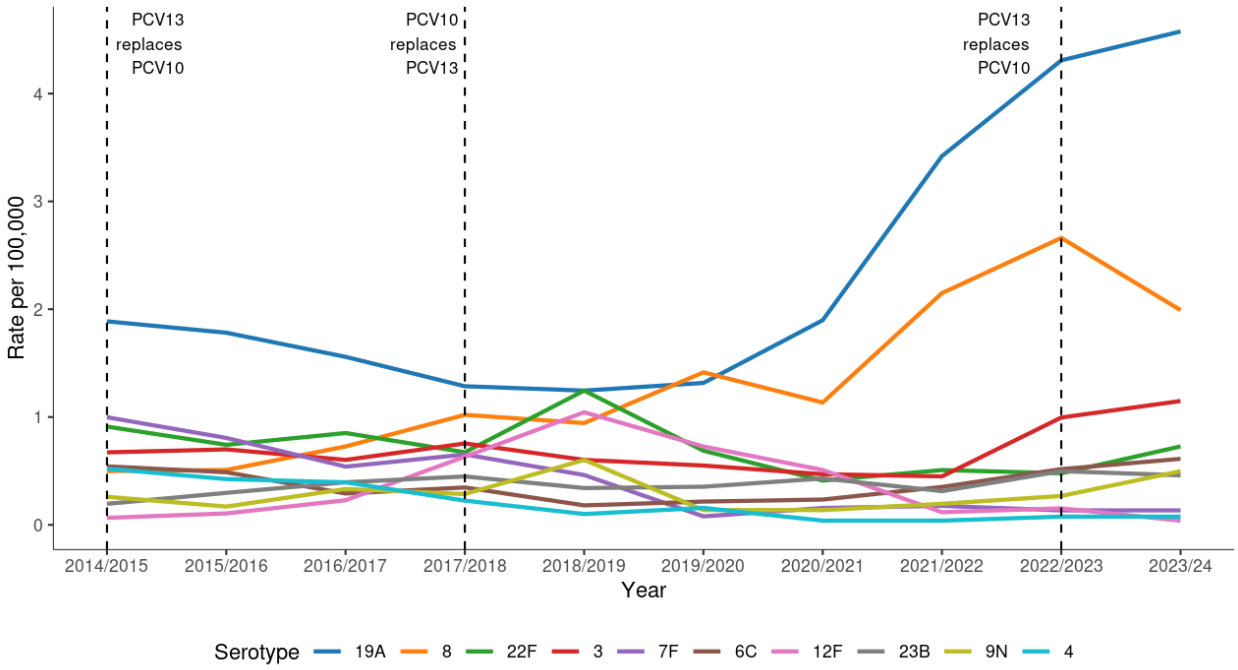
Figure 13. Invasive pneumococcal serotypes, July 2023/24[1]



[1] Only serotypes where there were more than 10 IPD cases are shown.

Figure 14 shows the trend in the incidence of IPD serotypes in New Zealand from 2014/15 to 2023/24. Serotype 19A has been the dominant serotype since 2014. The incidence of serotype 19A was relatively stable until 2020 when there was a sharp increase. Serotype 8 has been the second most common serotype seen in New Zealand since 2019, incidence of disease caused by this serotype increased from 2020/21 before decreasing from 2022/23.

Figure 14. Invasive pneumococcal serotypes, 2014/15 to 2023/24



*PCV13 serotypes

Serotype trends by age

In 2023/24, serotype 19A was the predominant serotype in all age groups (Figure 15). Among children <2 years, incidence of disease caused by 19A decreased sharply from the high seen in 2022/23 (from 23.2 to 5.8 per 100,000).

Incidence of 19A also decreased among children aged 2 to 4 years compared to 2022/23 (from 10.5 to 5.5 per 100,000). Among those aged 5 to 64 years and ≥65 years, incidence of 19A continued to increase in 2023/24.

Serotypes 8 and 22F were the second most common serotype in adults aged ≥65 years, serotype 8 was the second most common among adults aged 5 to 64 years, and serotype 3 was the second most common among children aged <2 years and 2 to 4 years.

The incidence of 19A was 3.5, 5.0, 1.7 and 3.7 times that of the second most common serotypes in the <2 years, 2 to 4 years, 5 to 64 years and ≥65 years age groups respectively.

Further information on the serotypes causing disease among vaccine-eligible children <5 years old is available in, Table 4 below.

Figure 15. Common serotypes by age group, rate per 100,000, 2023/24

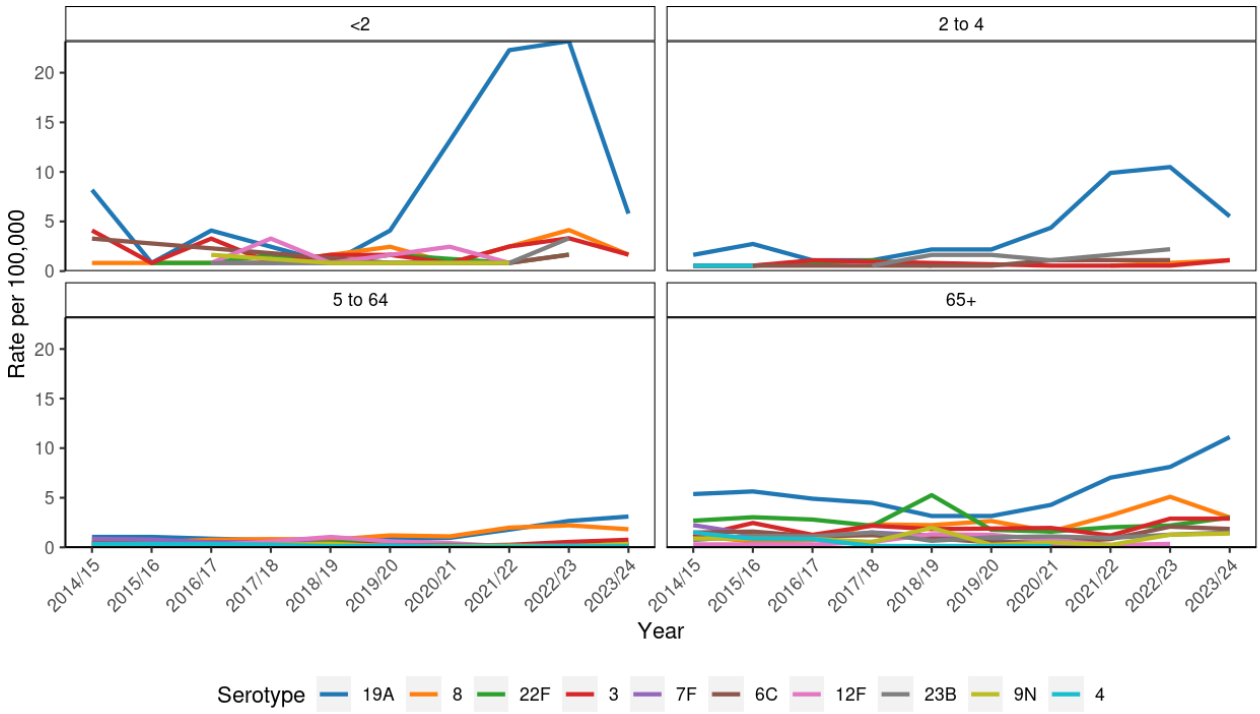


Table 4 shows the number of 19A cases by age group and year as well as the proportions of total typed cases for each age group that were 19A. From 2019/20 to 20223/24 the absolute number and proportion of 19A cases increased across most age groups. Between 2022/23 and 2023/24, the number and proportion of 19A cases decreased for <1, 1 and 2 to 4 years but increased in the ≥65 years and remained stable for the 5 to 64 year olds.

Table 4. Serotype 19A cases and proportions of total typed cases by age group (years) and year

Age group (years)	2019/20	2020/21	2021/22	2022/23	2023/24
	n (%)	n (%)	n (%)	n (%)	n (%)
<1	4 (24)	10 (62)	16 (62)	13 (48)	4 (31)
1	1 (14)	6 (33)	11 (69)	15 (62)	3 (43)
2-4	4 (40)	11 (69)	22 (76)	21 (66)	13 (57)
5-64	33 (15)	35 (19)	67 (29)	106 (35)	123 (35)
≥65	25 (16)	35 (23)	59 (30)	70 (27)	96 (34)

HOSPITALISATIONS AND DEATHS

Hospitalisation status was recorded for 725/737 (98.4%) cases in 2023/24. Among cases with hospitalisation status recorded, almost all were hospitalised (699, 96.4%).

A clinical presentation was recorded for 733/737 (99.5%) cases in 2023/24 (Table 5). Pneumonia and meningitis were the most common presentation in the <1 year olds, while pneumonia was the most common among other age groups. Bacteraemia without focus was the second most common presentation in age groups 2-4 years and over.

Table 5. Invasive pneumococcal disease, clinical presentation by age group, 2023/24[1]

Age group (years)	Meningitis		Empyema		Pneumonia		Bacteraemia		Other		Total
	n	%	n	%	n	%	n	%	n	%	n
<1	5	35.7	1	7.1	5	35.7	3	21.4	0	0.0	14
1	2	15.4	1	7.7	7	53.8	1	7.7	2	15.4	13
2–4	2	6.1	6	18.2	18	54.5	7	21.2	0	0.0	33
<5	9	15.0	8	13.3	30	50.0	11	18.3	2	3.3	60
5–64	23	6.1	13	3.4	260	68.8	63	16.7	19	5.0	378
≥65	7	2.4	5	1.7	233	79.0	40	13.6	10	3.4	295
Total	**39**	**5.3**	**26**	**3.5**	**523**	**71.4**	**114**	**15.6**	**31**	**4.2**	**733**

[1] N: number of cases with 'yes' recorded for the clinical presentation. Any cases for which *S. pneumoniae* was identified in CSF were considered to be cases of pneumococcal meningitis. If more than one clinical presentation has been recorded, clinical presentations have been prioritised as: meningitis, empyema, pneumonia, bacteraemia, other. %: percentage of cases within the age group with the clinical presentation. 'Other' includes septic arthritis. At least one clinical presentation was recorded for 733 (99.5%) of cases notified in 2023/24.

Based on the information in EpiSurv, there were 26 deaths due to IPD in 2023/24. Just over 25% (7/26, 26.9%) of deaths occurred in those aged <65 years. The mortality data available in EpiSurv is provisional.

IMMUNISATION STATUS

A pneumococcal vaccine was introduced to the childhood schedule in 2008 and there have been numerous changes to the schedule since this time (described in Table 1, above). Most recently, PCV13 replaced PCV10 on the childhood immunisation schedule in December 2022. This report covers the first 18 months since this change. In 2023/24, there were 57 IPD cases in children aged 6 weeks to <5 years. Table 6 summarises the vaccination status and serotype causing disease for these cases. There were also three cases of IPD in children <6 weeks of age and thus not yet eligible for PCV13. Of these 57 cases, 50 children had at least one dose of vaccine more than 14 days prior to onset of IPD. One case had one dose within 14 days prior to onset and is therefore classified as unvaccinated. Of the 7 cases for which there were no record of PCV vaccination in AIR, 5 were classified as unvaccinated and two were classified as having unknown vaccination status in EpiSurv.

A serotype was identified in 41 of the 57 cases; 24 (58.5%) of these cases were due to serotypes covered by PCV13 (20 cases of 19A, 3 cases of 3, and one case of 19F); three (7.3%) due to additional serotypes included in PCV15 (all 33F); and five (12.2%) due to additional serotypes included in PCV20 (three cases of 8, two cases of 10A). There were 9 cases (22.0%) due to serotypes not included in any pneumococcal conjugate vaccine in production in 2023/24.

Most PCV13-serotype cases occurred in children who only received PCV10 (12 cases). There were 5 cases of PCV13-serotype who were either unvaccinated or for whom their vaccination status was unknown; there were three PCV13-serotype cases among those who only received PCV13 doses (all 19A), and three who received a mix of PCV10 and PCV13 (all 19A). There were no breakthrough infection cases in children <5 years with three or more PCV doses.

Table 6. Number of cases aged 6 weeks to 5 years by vaccination type, and serotype, 2023/24

Vaccine serotype	PCV7[a]	PCV10[b]	PCV13			PCV15		PCV20					Non-PCV[c]	Un-known[d]	Total cases
Vaccine received/dose			19A	3	6A	22F	33F	8	10A	11A	12F	15B			
Unvaccinated or Unknown Vaccination Status	1		4	1					1						7
PCV10															
1									1					1	2
2															
3+			10	2				2					3	9	26
PCV13															
1			1				1						1		3
2			2					1						2	5
3+														1	1
Mixed PCV															
PCV10/13			3				2						5	3	13
Total	**1**	**0**	**20**	**3**	**0**	**0**	**3**	**3**	**2**	**0**	**0**	**0**	**9**	**16**	**57**

Note: blank cells represent 0 observations. Children diagnosed before they were PCV eligible (6 weeks) are not included.
[a]PCV7 serotypes: 4, 6B, 9V, 14, 18C, 19F, 23F
[b]Additional PCV10 serotypes: 1, 5, 7F.
[c]A serotype not covered by any PCV in production in 2024.
[d]Serotype is not known either because the case was identified from an antigen test, the isolate was not typed, or the typing did not yield a result.

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