Government of Western Australia
North Metropolitan Health Service

Epidemiology of notifiable infectious diseases in metropolitan Perth

Annual report 2024

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Epidemiology of notifiable infectious diseases in metropolitan Perth: Annual report 2024.

Boorloo (Perth) Public Health Unit

Public Health and Clinical Excellence

North Metropolitan Health Service

Note: For this report, the geographical boundaries of metropolitan Perth (henceforth referred to as Perth) are defined by the area within the East, North and South Metropolitan Health Services (EMHS, NMHS and SMHS). The use of the term 'Aboriginal' within this document refers to Australians of both Aboriginal and Torres Strait Islander people. The term "Aboriginal" is used in preference to "Aboriginal and Torres Strait Islander" in recognition that Aboriginal people are the original inhabitants of Western Australia (WA). No disrespect is intended to our Torres Strait Islander colleagues and community.

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The NMHS acknowledges the traditional owners of the land, the Noongar people. We pay our respects to the elders past and present and recognise the continuing cultural and spiritual practices of the Noongar people.

Boorloo (Perth) Public Health Unit would like to acknowledge the assistance of medical, nursing and scientific staff working in general practices, hospitals and laboratories, for their assistance with public health follow-up of persons with notifiable diseases, and their essential contributions to prevention and control of communicable diseases in the Perth metropolitan area.

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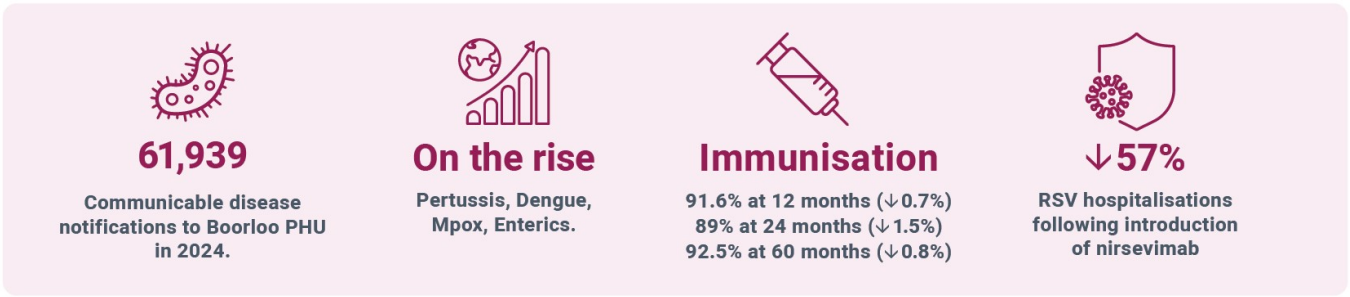
Contents

Executive Summary

Boorloo (Perth) Public Health Unit (Boorloo PHU) is responsible for the public health management of notifiable diseases in metropolitan Perth and contributes to communicable disease prevention through programs directed at immunisation and clinician support. This report aims to inform healthcare providers and stakeholders about local trends in notifiable disease epidemiology and to highlight relevant public health actions and issues.



Key outbreaks of STIs

- **Mpox outbreak 2024**: Boorloo PHU managed Perth's first sustained community transmission of mpox, with 21 notified cases producing 138 high risk contacts.
- **Infectious syphilis notifications decreased** for the second consecutive year, with fewer notifications among pregnant women, women of reproductive age, Aboriginal Australians and people experiencing homelessness. Notifications **increased** among men who have sex with men (MSM) and culturally and linguistically diverse (CaLD) people.

Return of important vaccine-preventable illnesses

- **Pertussis epidemic arrived**: The anticipated epidemic appears to have commenced in late 2024, with 605 cases notified (a 980% increase from 2023).
- **Invasive meningococcal disease notifications increased**: to 11 cases in 2024, from the record low of 4 cases in 2023. Meningococcal B predominated.

Travel-related illnesses an ongoing threat

- **Dengue notifications more than doubled** in 2024 compared to 2023, reflecting the global arbovirus emergency declared in December 2023.
- **Hepatitis A and typhoid fever** notifications increased for the third consecutive year.
- **Rabies post-exposure prophylaxis** was required for 272 Perth residents.

Successful immunisation programs amid overall waning coverage

- **Immunisation coverage in Perth continued to fall**, with rates of 91.6% at 12 months, 89% at 24 months and 92.5% at 60 months of age. However, for Aboriginal children, there was a 1.1% increase in coverage among those 12 months of age.
- **Respiratory syncytial virus (RSV) hospitalisations among infants reduced** by 57% in 2024 following the introduction of the RSV immunisation nirsevimab.
- **Moorditj programs:** Boorloo PHU continued to support Aboriginal families to have timely access to immunisation services.

Background

Purpose

Boorloo PHU, formerly Metropolitan Communicable Disease Control, was established on 1 July 2016 and has responsibility for the public health management of notifiable diseases in metropolitan Perth. The aim of this annual report is to inform healthcare providers and other stakeholders about important trends in notifiable infectious diseases and immunisation activities in Perth in 2024.

Notifiable Diseases

Under Part 9 of the Public Health Act 2016 medical practitioners or nurse practitioners attending to a patient with a notifiable infectious disease have a legal obligation to report the disease to the Department of Health.[1] Similar obligations apply to pathology laboratories where test results indicate a notifiable disease. Data on individuals with most notifiable diseases and related conditions are recorded in the Western Australian Notifiable Infectious Diseases Database (WANIDD). Communicable disease notifications are crucial for informing disease surveillance, public health management, policy, and interventions. A list of notifiable infectious diseases and related conditions in WA is available online.[2]

Data Sources

Notification data

Notifiable disease data for Perth and WA were extracted from WANIDD on 22 April 2025 and 2 April 2025 respectively and are subject to revision. Data were retrieved using an **optimal date of onset of disease** (ODOO) from 1 January to 31 December 2024. Exceptions to this were those diseases with a long delay between diagnosis and onset, namely, non-infectious syphilis, tuberculosis, leprosy, Creutzfeldt-Jakob disease, and unspecified hepatitis B and C. For these diseases, data were retrieved by the **date of receipt** of notification (DOR) from 1 January to 31 December 2024. National notification rates for 2024 were obtained from the National Notifiable Diseases Surveillance System (NNDSS) data visualisation tool on 22 April 2025. Data related to COVID-19 and mpox cases were extracted from the Public Health Operations Covid-19 Universal System (PHOCUS) on 4 June 2025. Data on sexually transmissible infection (STI) testing numbers in 2024 were provided by Communicable Disease Control Directorate (CDCD).

Population data

Population data were obtained from the Australian Bureau of Statistics. The estimated resident population for Greater Perth at 30 June 2024 was 2,384,371[3] and for WA at 30 June 2024 was 2,981,752.[4] Population estimates for HSP catchment were derived from the Australian Bureau of Statistics population by LGA2.

Immunisation data

The Australian Immunisation Register (AIR) provides quarterly reports of immunisation coverage for three age groups: 12 to <15 months, 24 to <27 months, and 60 to <63 months. Approval was provided by the AIR Data Steward for usage of these data from the quarterly reports for 2024 (see Appendix 2 for standard data suppression rules).[5]

Overview of notifiable diseases

In 2024, there were 61,939 infectious diseases notified in Perth. Excluding COVID-19 notifications for comparability, 48,933 notifications were received. This was a 5.1% reduction from 2023 numbers, largely due to fewer influenza notifications in 2024. However, notifications remain 35.5% above the five-year average (36,100 per year between 2019 and 2023).

Figure 1 demonstrates the number of notifications by disease category in 2024. Notifications in every disease category exceeded the 5-year average, except for blood-borne diseases. This is likely related to reduced notifications seen during the COVID-19 pandemic period, particularly for vaccine preventable diseases (influenza, rotavirus and pertussis notifications were all considerably lower during the COVID-19 pandemic). The significant increase in the number of diseases notified in the "other diseases" category is largely artefactual with invasive group A streptococcal infection, mpox and RSV becoming newly notifiable diseases after the commencement of the 5-year average period.

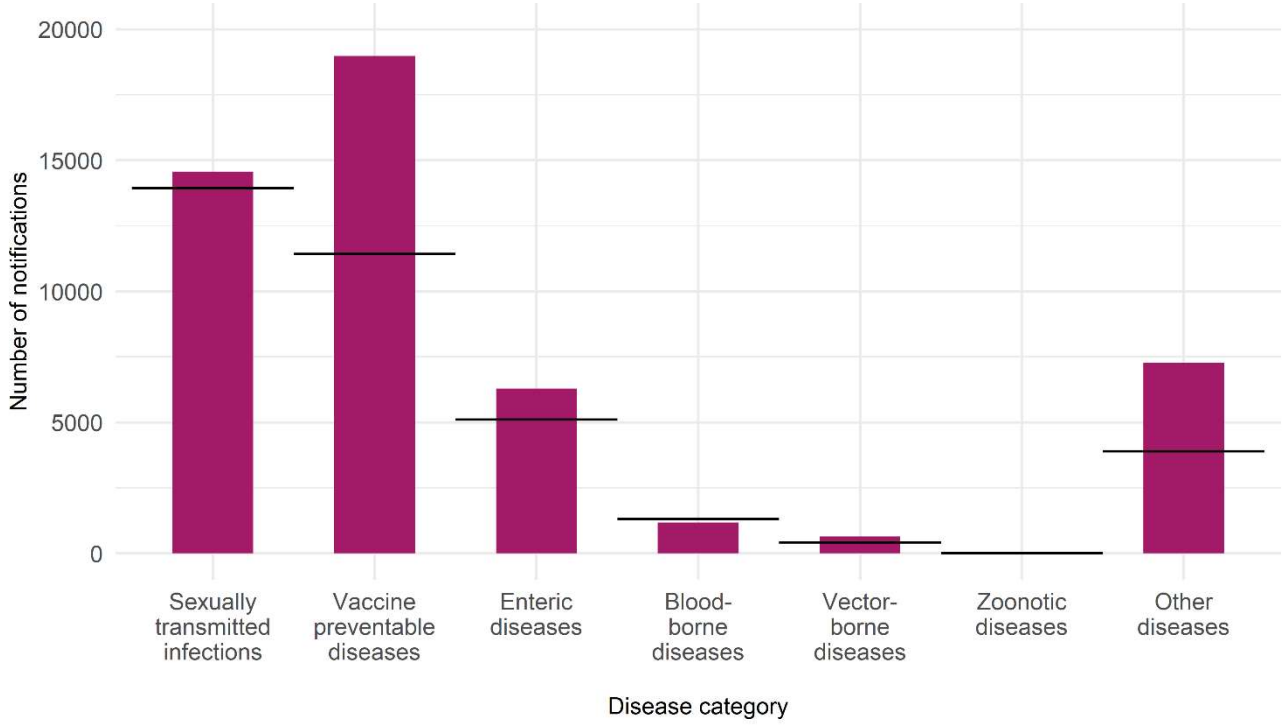


Figure 1: Number of notifications by disease category in 2024 (crimson) not including COVID-19. The black lines represent the average number of notifications across previous 5 years (2019 to 2023) by disease category.

The number of notifications in metropolitan Perth for each disease is listed in Table 1 for the years 2020 to 2024. Crude notifications rates for each disease in metropolitan Perth, WA and Australia are presented for 2024.

Table 1: Perth notifications 2020 – 2024 & notification rates for Perth, WA and Australia in 2024.

	Number of notifications per year					2024 Notification rate per 100,000 population		
Notifiable disease	2020	2021	2022	2023	2024	Metro	State	National
Blood-borne viruses								
Hepatitis B (newly acquired)	11	7	5	15	13	0.5	0.6	0.3
Hepatitis B (unspecified)	418	401	335	391	434	18.2	17.8	20.3
Hepatitis C (newly acquired)	73	74	51	109	118	5.7	6.1	3.1
Hepatitis C (reinfection)	NN	NN	NN	25	7	0.2	0.3	N/A
Hepatitis C (unspecified)	611	696	536	554	589	24.2	25.8	24.1
Hepatitis D	2	9	6	2	13	0.5	0.6	0.4
Enteric Diseases								
Campylobacteriosis	2284	2437	3127	3789	3758	157.6	164	142.4
Cholera	0	0	0	1	0	0	0	<0.1
Cryptosporidiosis	425	53	194	135	651	27.3	27.1	51.6
Hepatitis A	5	1	12	16	19	0.8	0.7	0.9
Hepatitis E	3	0	0	6	0	0	0	<0.1
Listeriosis	6	4	8	5	7	0.3	0.3	0.2
Paratyphoid fever	0	0	1	14	6	0.3	0.2	0.4
Salmonellosis	1369	639	693	1061	1258	52.8	55.3	45.0
Shiga toxin-producing E. coli	80	83	123	119	95	4	7	3.7
Shigellosis	102	38	95	320	395	16.6	18.4	10.9
Typhoid fever	7	1	15	18	22	0.9	0.9	0.9
Vibrio parahaemolyticus	3	33	5	8	19	0.8	0.8	<0.1
Yersiniosis	14	32	26	84	54	2.3	2	NN
Sexually transmitted infections								
Chlamydia	8394	8714	8634	10195	10101	423.7	434.6	375.9
Lymphogranuloma venereum	3	0	0	0	2	0.1	0.1	NN
Gonorrhoea	2287	1871	2169	3452	3881	162.8	177.4	163.8
Syphilis (infectious)	465	479	517	421	406	17	20.4	22.0
Syphilis (non-infectious)	179	158	135	154	170	7.1	9.4	10.9
Syphilis (congenital)	3	1	1	4	0	0	0	<0.1
Vaccine-preventable diseases								
Diphtheria	0	0	1	2	1	<0.1	<0.1	<0.1
Haemophilus influenzae type B	1	0	0	0	0	0	0	<0.1
Influenza	982	23	10614	15876	12959	543.5	579.2	1344.3
Measles	4	0	0	6	5	0.2	0.2	0.2
Meningococcal disease (invasive)	5	5	14	4	11	0.5	0.4	0.5
Mumps	7	0	0	2	9	0.4	0.3	0.7
Pertussis	99	40	21	56	605	25.4	43.6	210.3
Pneumococcal disease (invasive)	73	108	125	165	151	6.3	8.8	8.7
Rotavirus	154	531	289	742	703	29.5	27.6	37,2
Rubella	1	2	1	4	1	0	0	<0.1

Notifiable disease	2020	2021	2022	2023	2024	Metro	State	National
Tetanus	1	1	0	0	0	0	0	<0.1
Varicella	3977	4149	4318	4717	4538	190.3	191.9	128.9
Vector-borne Diseases								
Murray Valley encephalitis virus	0	0	0	1	2	0.1	0.1	<0.1
Kunjin/West Nile virus	0	0	0	0	0	0	0	<0.1
Japanese encephalitis virus	0	0	0	0	0	0	0	<0.1
Barmah Forest virus	3	4	6	8	12	0.5	0.8	1.2
Chikungunya virus	3	0	8	8	10	0.4	0.4	0.3
Dengue virus	48	0	62	160	452	19	19.1	8.7
Malaria	22	9	34	42	49	2.1	2	1.7
Rickettsial disease (typhus)	9	7	8	26	33	1.4	1.8	NN
Ross River Virus	237	375	285	150	86	3.6	7.4	12.4
Zika virus	0	0	1	0	0	0	0	NN
Zoonotic diseases								
Leptospirosis	0	0	0	5	0	0	0	0.5
Q Fever	2	1	4	3	9	0.4	0.5	3.2
Brucellosis	0	0	0	0	1	0	0.1	0.5
Other Diseases								
Botulism	0	0	0	0	0	0	0	<0.1
Creutzfeldt-Jakob disease	9	6	6	6	4	0.2	0.2	NN
Haemolytic uraemic syndrome	0	2	1	2	0	0	0	<0.1
Legionellosis	60	47	48	54	53	2.2	2.3	3.1
Leprosy	3	3	2	0	1	0	0	<0.1
Melioidosis	0	3	1	3	1	0	0.2	NN
Tuberculosis	131	131	86	148	198	8.3	7.6	5.9
Acute Rheumatic Fever	0	0	0	0	0	0	0.1	NN
COVID-19	542	227	1038861	79739	12788	536.8	541	1259.9
Invasive Group A Streptococcus	NN	12	129	166	144	6	8.4	6.7
Acute Post-Streptococcal Glomerulonephritis	0	4	3	2	11	0.5	1.6	NN
Respiratory Syncytial Virus	NN	331	9385	8320	6836	286.7	312.6	646.9
Mpox	NN	NN	7	2	21	0.9	0.8	5.2
Candida Auris	NN	NN	NN	NN	5	0.2	0.2	NN

Data were retrieved from WANIDD; disease rows were excluded where no cases occurred locally, statewide, and nationally in the past 5 years. Data for rheumatic heart disease, antibiotic resistant organisms and human immunodeficiency virus (HIV) are collected and managed separately. NN=not notifiable; N/A=not available; <0.1 denotes a number less than 0.1 that would otherwise be rounded to zero. Varicella-Zoster includes chickenpox and shingles as well as those unspecified. From June 2021, iGAS and RSV were added as notifiable diseases. From January 2023, the case definition for hepatitis C (unspecified and newly acquired) case definition changed to account for reinfections, accounting for a small part of the increased case numbers. Candida auris was made notifiable in WA in December 2023. Comparability of COVID-19 notifications between years is limited by the temporary inclusion of positive Rapid Antigen Test (RAT) cases. Reporting of positive RAT results was compulsory between 8 February 2022 and 4 November 2022 and continued voluntarily until 9 October 2023. Between 1 January 2023 and 9 October 2023, RAT positive cases comprised 86% of notifications. Following 9 October 2023, only polymerase chain reaction (PCR)-positive results were notified. COVID-19 data from previous years has been revised to align with current methodologies for assigning case locations, including the redistribution of cases with unknown locations based on testing site data. Congenital syphilis rates are presented per 100,000 births.

RSV – new immunisation introduced, reducing hospitalisations among young children

Respiratory Syncytial Virus (RSV) is a major cause of respiratory distress requiring hospitalisation, particularly among infants under 6 months of age.[6] In April 2024, WA became the first Australian state to fund an infant immunisation program, providing the monoclonal antibody nirsevimab to all infants in their first RSV season and some higher risk infants in their second.[7] Nirsevimab is effective in preventing hospitalisation and intensive care admissions due to RSV among infants.[6] Of all eligible infants in WA, 71% received immunisation with nirsevimab during April-September 2024.[8] Boorloo PHU supported rollout of this immunisation through the Moorditj Kids program, providing nirsevimab during home visits to 79 high risk infants who would otherwise not be protected.

In 2024 there were 6,836 notifications of RSV in Perth, representing a 17.8% reduction from 8,320 notifications in 2023 (Figure 2a). This may represent a true reduction in disease activity, or a reduction in disease severity among vaccinated infants leading to reduced testing. While all age groups had fewer notifications in 2024 compared to 2023, the reduction in the 0–4-year age group accounted for 34.4% (n=510) of the overall reduction.

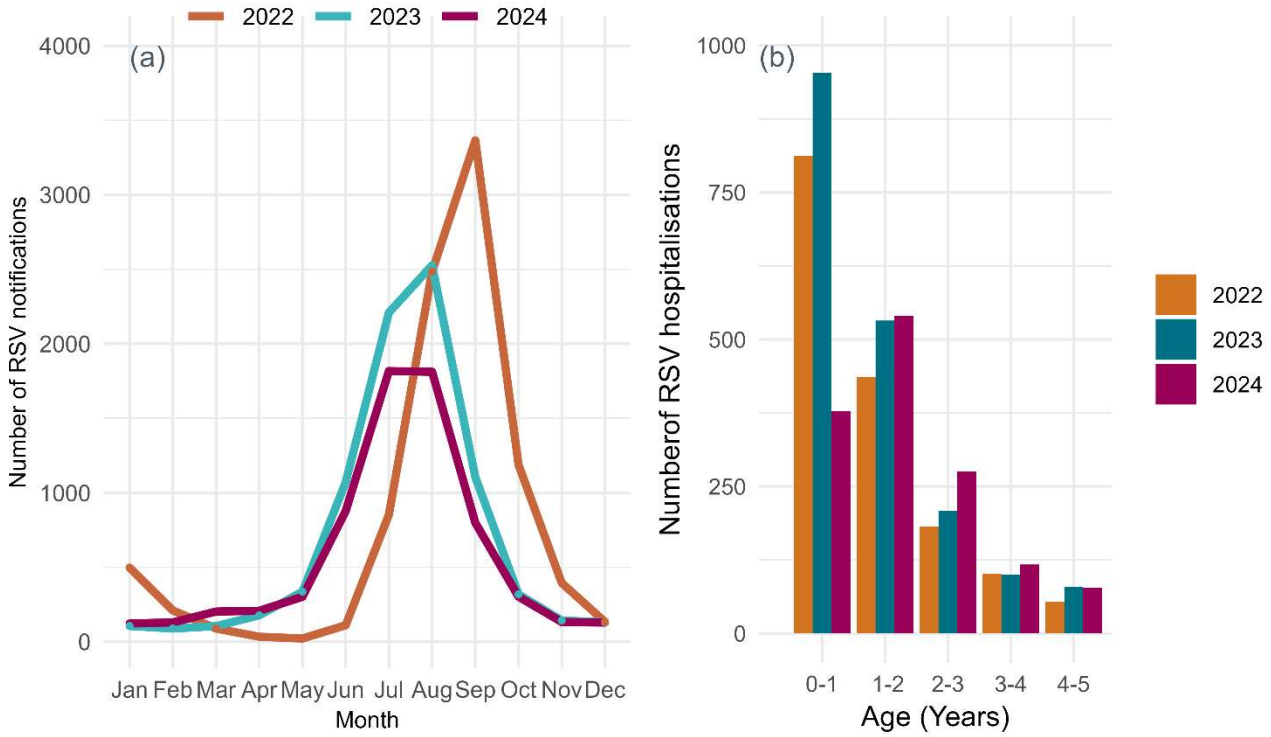


Figure 2: (a)Comparison of the number of RSV notifications per month and year, 2022 to 2024. (b): Number of cases hospitalised with RSV by age group, 2022 to 2024. Source: Bloomfield et al. (2024).[8]

This reduction in notifications was coupled with a reduction in RSV hospitalisations. An analysis by Bloomfield et al. (2024) that linked WA notification data to hospitalisation data found hospitalisations among infants under one year of age were reduced by 57% compared to 2022 and 2023, whereas hospitalisations in other age groups were steady (Figure 2b).[8] Continued surveillance of RSV notifications will be important to evaluate the impact of the maternal RSV vaccine Abrysvo, which was funded under the National Immunisation Program (NIP) from 3 February 2025.

Sexually Transmitted Infections – outbreaks continue, some changing patterns noted

Mpox – sustained community transmission in Perth for the first time

After sporadic cases of mpox occurred in Perth in 2022 (n=7) and 2023 (n=2), sustained community transmission was observed in Perth for the first time from October 2024 to January 2025, though local elimination has subsequently been achieved once more. In total, 21 cases were notified in metropolitan Perth in 2024. All cases were among men, aged between 24 and 56 (median age 35 years). Three mpox cases were acquired interstate, one was acquired overseas, and 17 were locally acquired. Almost half of cases (47.6%) were unvaccinated.

This increase in cases in Perth occurred alongside a major re-emergence of mpox in other parts of Australia in the latter half of the year, particularly in New South Wales (NSW) and Victoria. In this outbreak, clade IIb mpox spread predominantly among MSM.

The 21 cases identified in 2024 produced 123 high-risk contacts, with an average of six high-risk contacts per case (range 1-40). Anonymity of intimate contacts was a significant challenge in contact tracing for mpox. Cases commonly met sexual partners either through phone apps or at sex-on-premises venues (SOPVs), with limited means to contact the person later. Of the 123 high risk contacts identified, 50 contacts (40.7%) in this outbreak were from interactions at SOPVs and 51 (41.5%) were from engagements arranged on phone apps. Boorloo PHU's response to this outbreak centred on case quarantine, contact tracing and management, as well as risk communication[9] to encourage sexual behaviour adaptation and uptake of vaccination.

Syphilis – reduced numbers overall, but increased notifications among culturally diverse communities and men who have sex with men

Infectious syphilis notifications reduced for second consecutive year

In June 2020 an outbreak of syphilis was declared in metropolitan Perth[10], and a Syphilis Response Team (SRT) was established at Boorloo PHU in 2021. The SRT coordinates management of the syphilis outbreak in Perth, and co-chairs the Metropolitan Syphilis Outbreak Response Team (MSORT), a multidisciplinary group of stakeholders. The key aims of MSORT are to control the outbreak and to have no cases of congenital syphilis in metropolitan Perth.

Infectious syphilis notification rates fell for a second consecutive year in 2024, with 406 notifications representing a 3.6% decrease in notifications compared to 2023 (Figure 3). The rate of decrease has slowed considerably compared to the previous year's 18.7% reduction. The decline in case numbers has occurred despite a 5.4% increase in the number of syphilis tests undertaken in 2024 compared to 2023. Increases in testing may be party attributable to the increased use of three-point testing during pregnancy. Including non-infectious syphilis, overall notifications for syphilis were steady between 2023 and 2024 (with 575 and 576 cases notified, respectively).

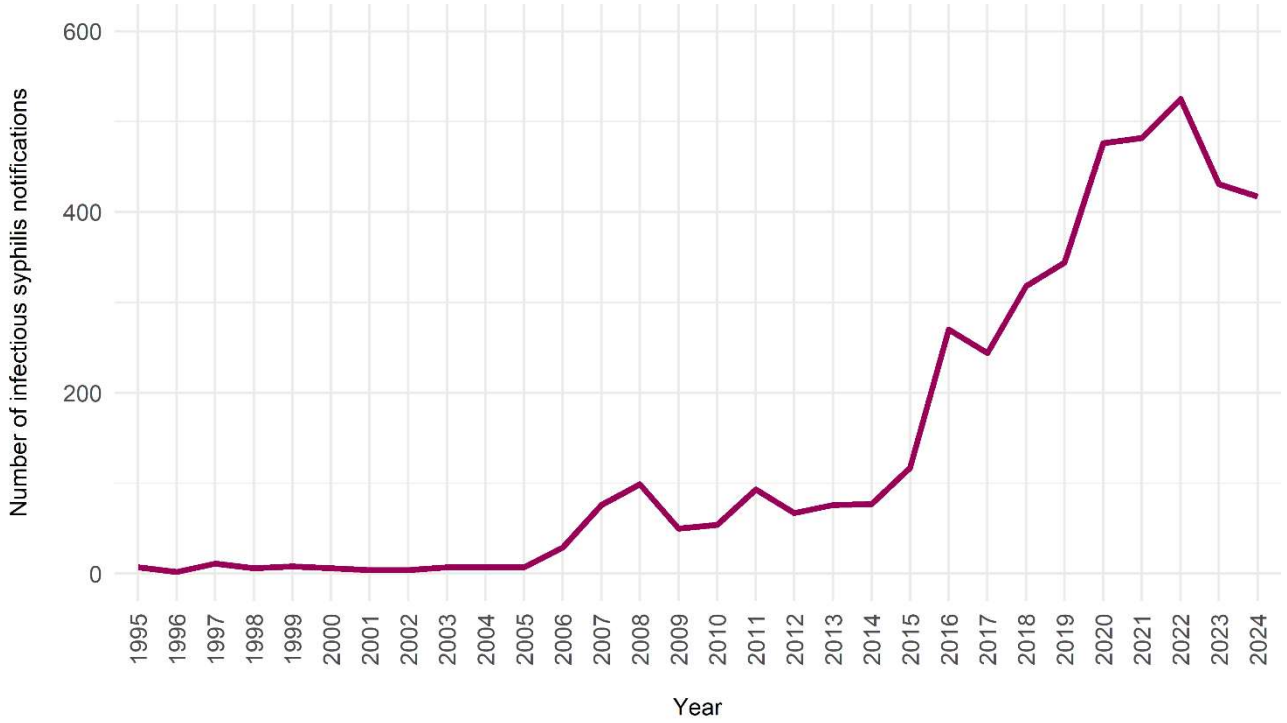


Figure 3: Number of notifications of infectious syphilis per year in metropolitan Perth from 1995 to 2024.

Syphilis reduced among women of reproductive age and during pregnancy

Central to the MSORT aim of having zero cases of congenital syphilis is preventing and managing syphilis cases among people of childbearing potential and those who are pregnant. There were 93 notifications of syphilis among women of reproductive age (WRA) in 2024, a 23.1% reduction compared with 2023, and the second consecutive decline in numbers after a near-exponential rise between 2016 and 2022 (Figure 4). Boorloo PHU confirms adequate treatment and supports contact tracing of cases of infectious syphilis in Perth, which helps to avert transmission to people of childbearing potential.

Likewise, there has been a steady reduction in the number of infectious syphilis notifications during pregnancy since the establishment of the SRT, with notifications falling by 36% from a peak of 25 notifications in 2020 to 16 in 2024 (Figure 4). There were no cases of congenital syphilis in 2024, reflecting the significant efforts directed at this population in terms of regular testing, linkage with antenatal care, and early treatment.

Syphilis in other priority groups – a mixed outlook

Other priority populations in the syphilis outbreak response include people experiencing homelessness, Aboriginal peoples, MSM, and CaLD people. These groups are prioritised in the outbreak response due to either an increased risk of onward transmission, or an increased risk of delayed diagnosis and treatment (which may be due in part to competing priorities, barriers to healthcare access and/or social stigma).

Notifications of syphilis among people experiencing homelessness fell from 23 in 2023 to 11 in 2024 (Figure 4). Steady progress has been made in reducing syphilis notifications in this population. SRT have provided additional capacity to ensure treatment and contact tracing in this group, and have developed strong links with homelessness service providers.

As a result, the number of notifications has reduced by 64.5% since 2020, despite an increasing population experiencing homelessness overall.[11]

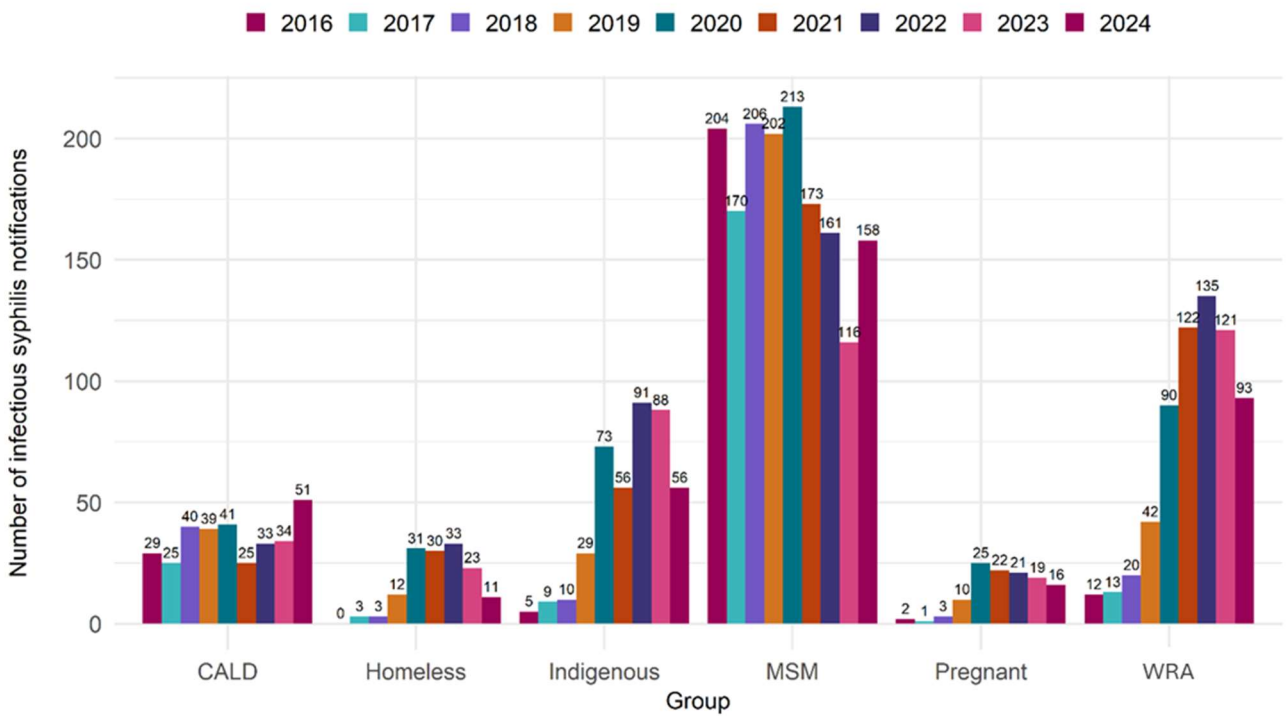


Figure 4: Number of infectious syphilis notifications from each priority group per year from 2016 to 2023.

The number of infectious syphilis notifications among Aboriginal peoples fell from 88 in 2023 to 56 (36% reduction) in 2024 (Figure 4). An increased use of point of care testing, which facilitates early detection and treatment of syphilis, may have contributed to this reduction through decreased onward transmission. Furthermore, the Aboriginal Health Team from Boorloo PHU regularly attend community events and promote safe sexual behaviours and sexual health engagement to the community. The SRT and Aboriginal Health Team provide education to healthcare providers to encourage culturally safe testing and treatment for syphilis.

The number of infectious syphilis notifications among MSM increased by 30.2% in 2024, from 116 to 156 cases. This is a concern as MSM are more likely to engage in high-risk sexual behaviours or have multiple casual partners[12], which can propagate the outbreak.

Infectious syphilis notifications among CaLD individuals increased by 50% in 2024, to 51 notifications. CaLD individuals face significant barriers to effective healthcare, often coupled with social stigma related to sexual healthcare.[13] This can lead to a reluctance to disclose sexual histories and a delay to diagnosis, treatment and contact tracing for syphilis. Consequently, the increase in syphilis cases among CaLD populations represents a risk of ongoing transmission and congenital syphilis.

Chlamydia and Gonorrhoea – ever-growing epidemics

The number of notifications of chlamydia remained relatively steady in 2024 with 10,013 notifications compared to 10,195 notifications in 2023 (Figure 5a). The number of notifications for gonorrhoea reached a record high in 2024 with 3,881 cases being notified, a 12.4% increase from 2023 (Figure 5b). The number of tests performed for chlamydia and gonorrhoea in 2024 were 2.9% and 3.2% higher than in 2023, respectively; as such, the increase in gonorrhoea cases is not explained only by increased testing. The increase in the number of STIs notified in recent years may be related to changing sexual behaviours with an increase in casual sexual activity mediated by dating apps and may reflect changing attitudes towards condom use.

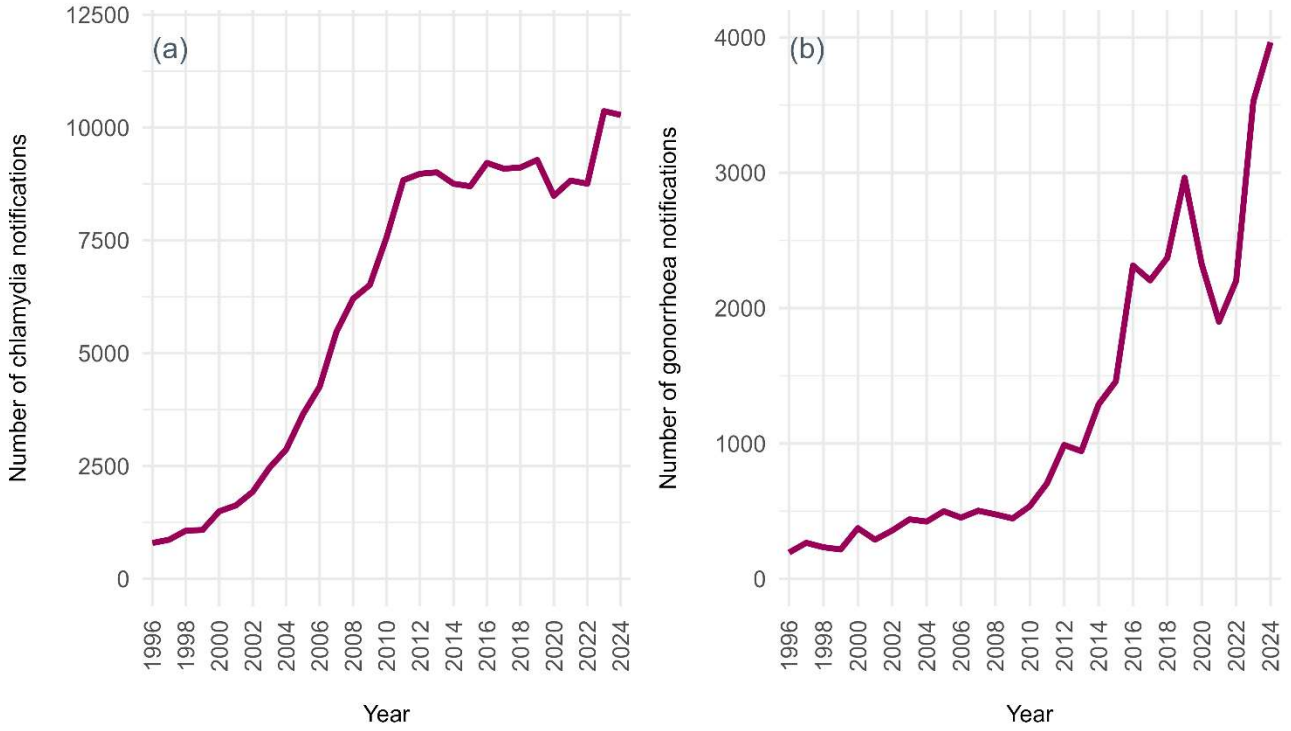


Figure 5: Number of chlamydia (a) and gonorrhoea (b) notifications per year from 1996 to 2024 in Perth.

The proportion of cases of chlamydia who identify as Aboriginal has steadily increased over the last decade from 4.7% in 2014 to 7.3% in 2024. Equally the proportion of cases of gonorrhoea who are Aboriginal has increased from 8.8% in 2014 to 12.4% in 2024. This may represent a true change in case demographics, an improvement of identification of Aboriginal status, or an increase in healthcare engagement and STI testing among Aboriginal people.

Multi-drug resistant gonorrhoea – incursions and local transmission

There were 5 cases of gonorrhoea with antimicrobial resistance of public health significance in 2024, an increase from 4 cases in 2023. All were multi-drug resistant (MDR) strains. Four exhibited decreased susceptibility to ceftriaxone, and one was critically resistant (MIC≥0.5). Three were also critically resistant to azithromycin (MIC≥256). Two of the cases were acquired overseas, one interstate, and two locally. Two cases were genomically linked but without a known epidemiological link, suggesting undetected community transmission.

STI co-infections: a growing, stark example of ‘the gap’

There were 921 instances of STI co-infections notified to Boorloo PHU in 2024 (defined as two or more notifiable STIs (excluding HIV) at the same time (+/- 3 days)), among 897 unique individuals. This represents a 4.5% increase in the number of people notified for STI co-infection compared to 858 notified in 2023 (Figure 6). These 921 co-infections represented 1,853 notifications in total, making up 12.7% of the 14,560 STI notifications for 2024. There were 23 individuals who had more than one episode of STI co-infection during 2024. Of the total occurrences of co-infections, co-infection with chlamydia and gonorrhoea was most common making up 93.1% of the notifications, 3.0% were notified co-infections of syphilis and chlamydia, 2.6% were co-infections of syphilis and gonorrhoea and 1.2% consisted of notifications for all three STIs. This highlights that the presence of one STI is a marker of risk for others, and the importance of comprehensive STI screening including syphilis testing.

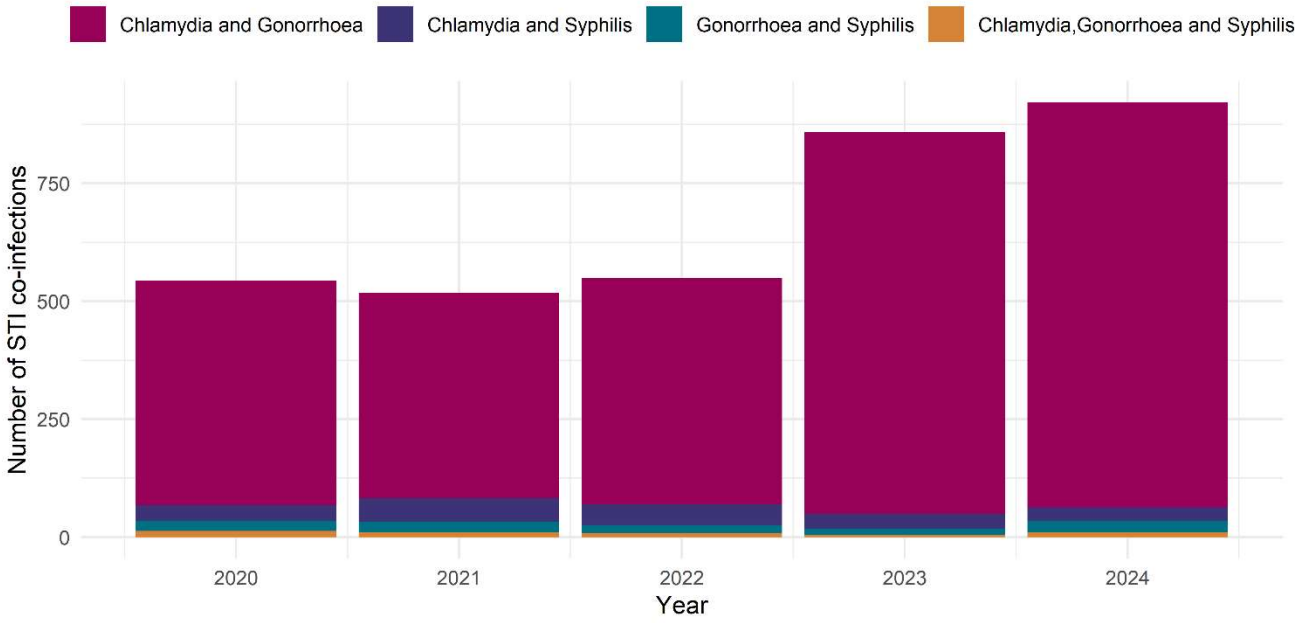


Figure 6: Number of STI co-infections notified by year and type.

STI co-infections more commonly occurred in younger age groups, with 68.2% occurring in those 20-40 years of age. Males were more commonly notified with more than one STI than females (577 notifications v 344 notifications). Aboriginal individuals were considerably over-represented in every age group, making up 16.7% of notified co-infections.

Blood-borne Diseases – steady gains but deepening inequities

Hepatitis C – active follow-up program improved testing and treatment

The number of notifications of hepatitis C remained reasonably stable in 2024 compared to 2023 with a decrease of 6 notifications (1%). Of the 714 notifications received, 118 were for newly acquired hepatitis C, 7 were for hepatitis C reinfections and 589 were for unspecified hepatitis C infection. The number of notifications has steadily decreased since the introduction of direct acting antivirals for hepatitis C in 2016 (Figure 7); however, these gains have not been equitably shared. Both the number and proportion of cases who are Aboriginal or are incarcerated have steadily increased. In 2024, 32.1% of cases identified as Aboriginal (n=229) and 35.3% of cases were incarcerated (n=252).

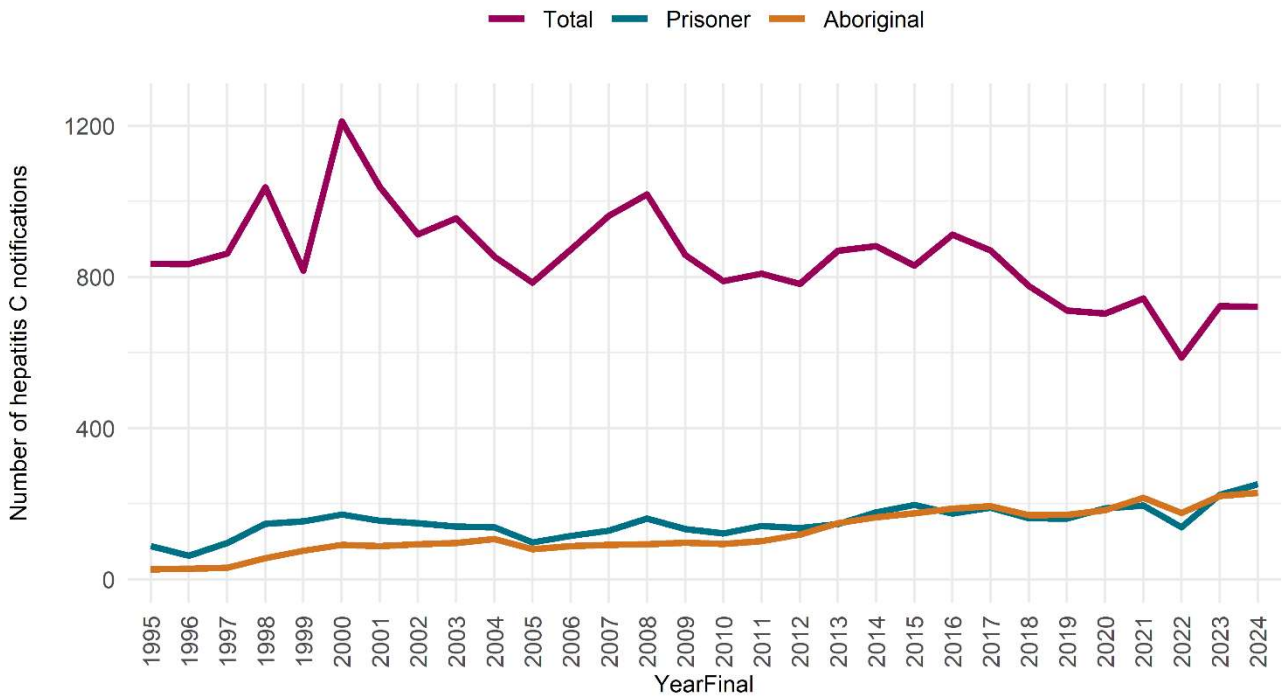


Figure 7: Number of hepatitis C notifications in Perth over time, 1995-2024 including number of cases among prisoners and Aboriginal people (categories are not mutually exclusive).

Boorloo PHU provides active follow-up of hepatitis C cases, with a view toward elimination of hepatitis C as a public health threat by 2030. This includes adding RNA tests reflexively, as well as contacting of clinicians and patients to encourage hepatitis C RNA testing and treatment. In 2024, 429 (59%) of notified hepatitis C cases were in the Perth community (rather than incarcerated, outside of Perth, or deceased). Among these, 96% of cases had an RNA test completed (exceeding the 2030 target of 90%), with Boorloo PHU boosting this figure by 35%. Of those eligible, 68% commenced treatment (not yet achieving the 2030 target of 85%), with 19% of these treatment courses starting because of Boorloo PHU interventions.

Hepatitis B – vaccine preventing future disease burden

There were 447 notifications of hepatitis B in 2024 which represents a 10.1% increase in notifications compared to 2023. However, the 2024 notification rate is in keeping with the pre-COVID-19 5 year mean of 459.4 notifications per year.

After the introduction of hepatitis B vaccines to the infant immunisation schedule in 2000, the proportion of cases born in Australia has steadily decreased, whereas overseas-born cases continue to be notified in high numbers (Figure 8). Before 2000, the 5-year mean proportion of cases that were Australian born was 24%, while in 2024 only 6.8% of cases were born in Australia.

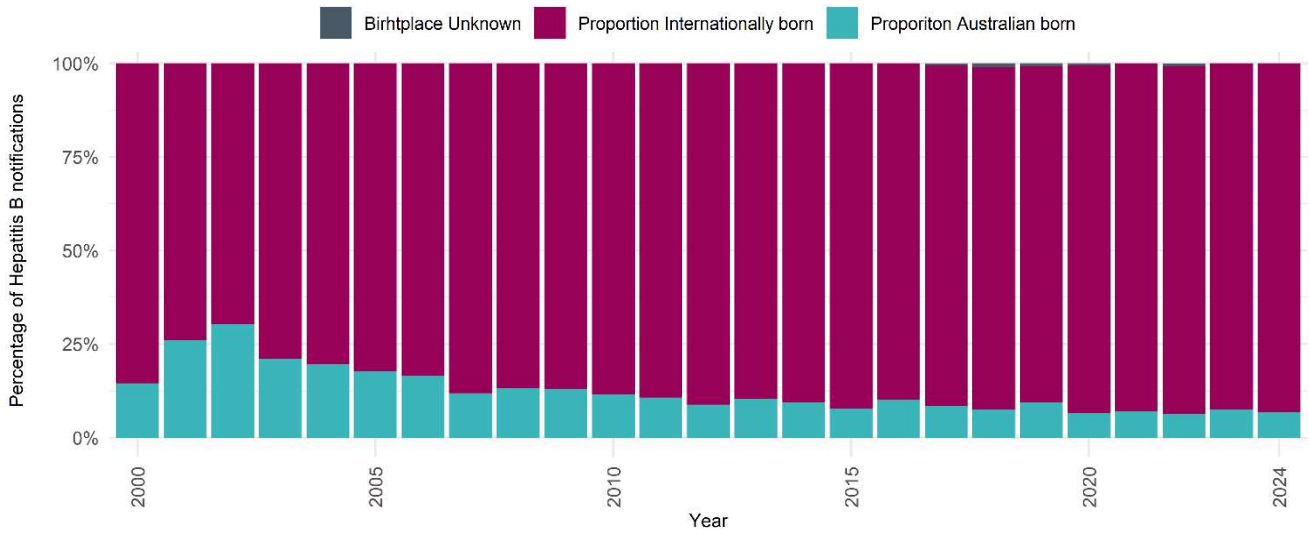


Figure 8: Percentage of Hepatitis B notifications that are Australian born, internationally born or of Unknown birthplace in each year from 2000 to 2024.

Equally, we have seen a shift in the age distribution of Australian-born cases since 2000 (Figure 9), with fewer notifications among those aged 0-29 years. In 2024, only 4 cases were diagnosed among people who had been born in Australia after 2000. All 4 were Aboriginal, and all were fully vaccinated; three had results suggestive of recent infection.

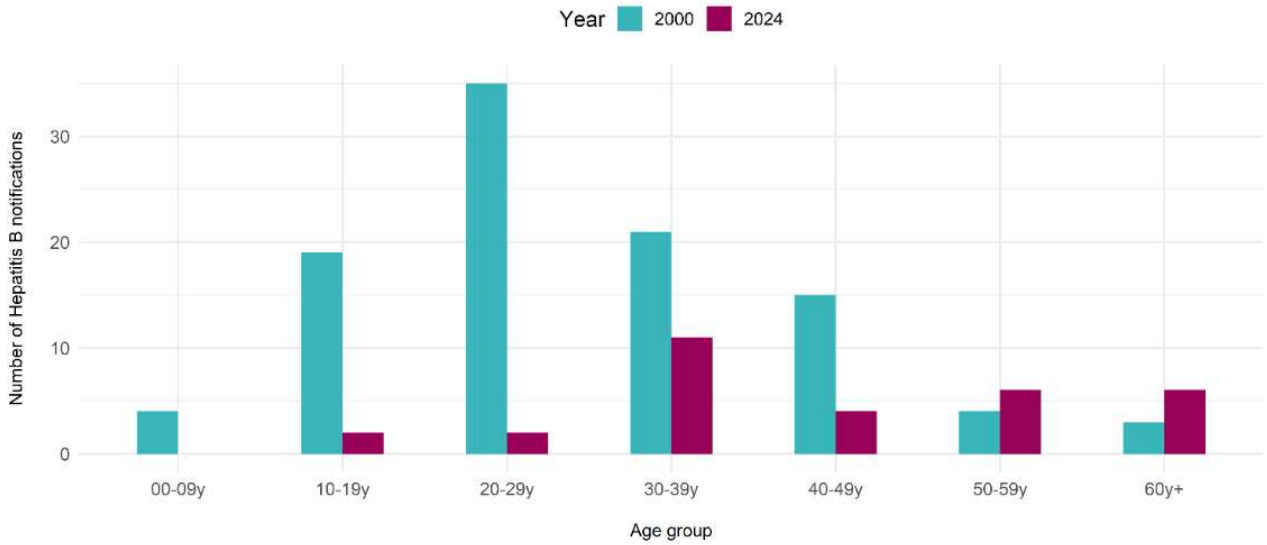


Figure 9: Comparison of the number of Australian born Hepatitis B notifications in 2000 (year of Hepatitis B vaccine introduction) and 2024 by age group.

Respiratory Pathogens – no surprises

Influenza – a later, longer, less severe season.

Boorloo PHU received 12,959 notifications for influenza in 2024, an 18.4% reduction from 15,876 notifications in 2023. However, this remains substantially higher than the 5 year-average of 7,799 notifications per year before the COVID-19 pandemic. Comparability of influenza notification data preceding COVID-19 is limited by changes in testing trends and availability of RAT testing. Influenza A made up 92.5% of notifications in 2024; the remainder were Influenza B. Comparing the epidemic curves, 2024 had a significantly later, longer flu season than the preceding 2 years (with the exponential increase in cases occurring from June 2024) and a lower peak notification rate (Figure 10).

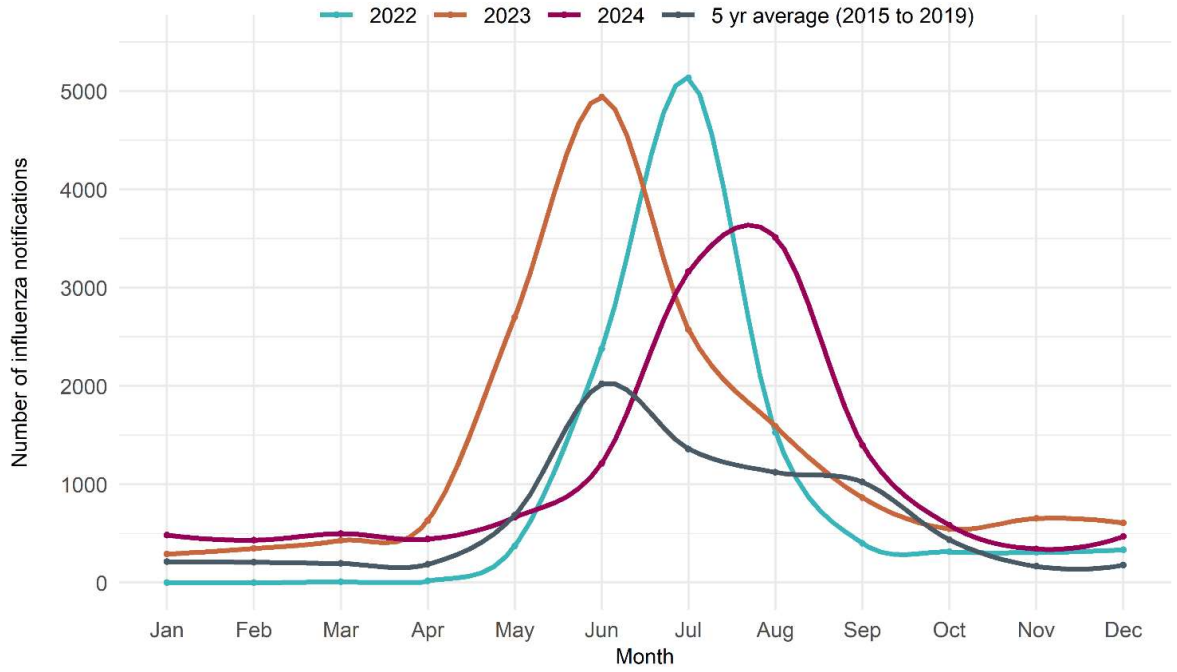


Figure 10: Number of influenza notifications per month for years 2024, 2023, 2022 and the average of 5-year pre-Covid-19 pandemic (2015-2019)

Respiratory outbreaks in residential aged care homes

There were 566 notifications of acute respiratory illness outbreaks in residential aged care homes (RACH) in 2024. Of these notifications, 500 were confirmed to be caused by COVID-19 and 30 were confirmed to be cause by influenza. This is stable compared to the number of notifications received in 2023 and is a reduction in confirmed influenza outbreaks compared to the 5-year pre-COVID average of 37.2 outbreaks per year. This may be due in part to increased familiarity with infection control measures within RACH. Some of the reduction may be artefactual, as the definition of suspected influenza outbreaks in RACH has changed to align with the current definition for COVID-19 outbreaks. Prior to the pandemic, an influenza outbreak was defined as three staff or residents with influenza-like illness, with one proven to be influenza, whereas the current definition is two residents testing positive for influenza (RAT or lab-based test).[14] The number of COVID-19 confirmed outbreaks (Figure 11) continues to show a cyclical trend in keeping with cyclical COVID-19 activity in the community evidenced in wastewater.[15]

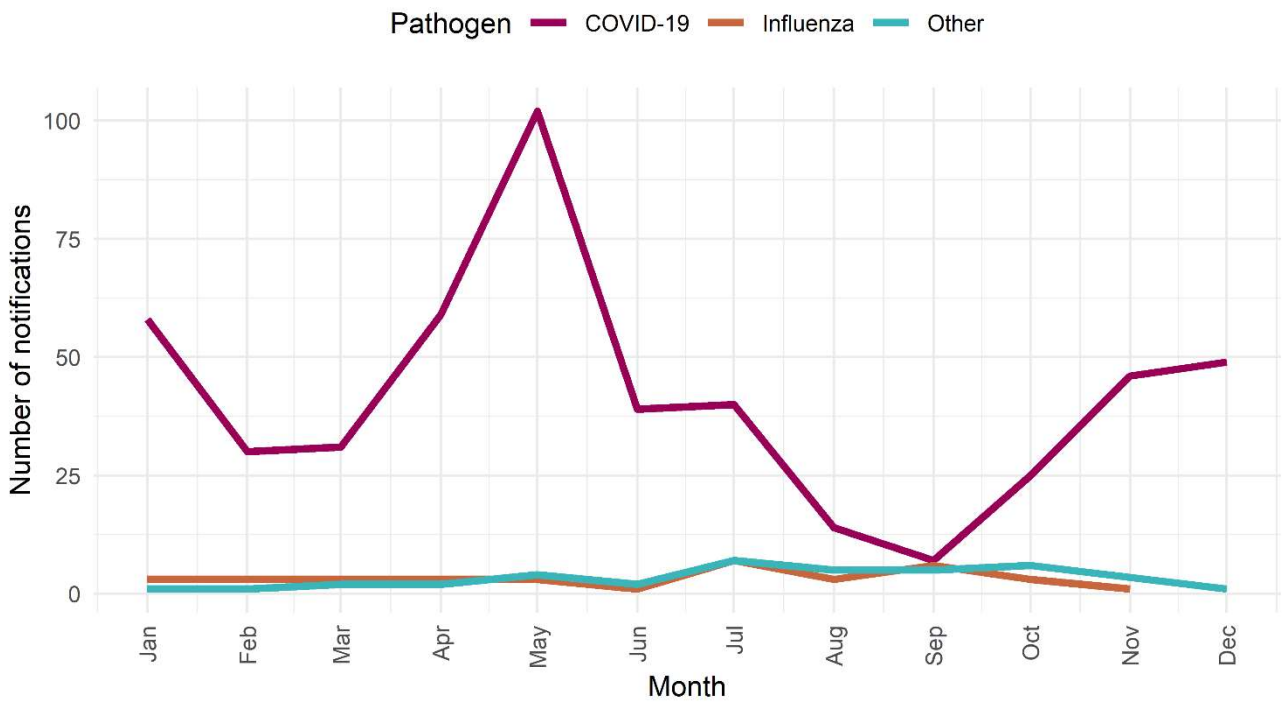


Figure 11: Number of respiratory disease outbreaks in residential aged care homes notified per month in 2024.

COVID-19 – not a seasonal winter illness, two peaks observed

There were 12,788 notifications of COVID-19 in 2024, an 84.0% decrease in notifications from 2023. Notably, 2024 is the first full year in which cases diagnosed through RAT testing are no longer included in notification data. Notifications peaked in January and May of 2024 (Figure 12). This is in keeping with the timing of increased notifications of outbreaks in RACH (Figure 11) and increases in wastewater detection.[15]

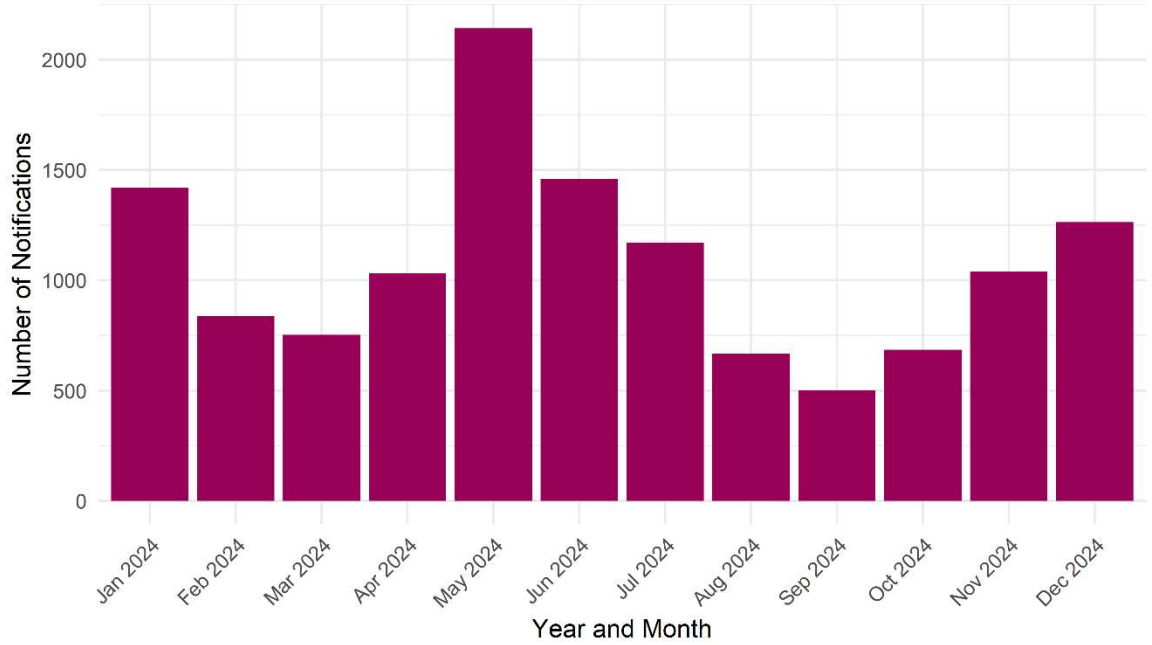


Figure 12: Number of notifications for COVID-19 per month for the year 2024.

Vaccine Preventable Diseases – increases in many important infections observed

Pertussis – an expected epidemic begins

Pertussis is a disease of cyclical epidemics, with a major increase in cases usually occurring every three to four years in Australia.[16] While this pattern was disrupted by COVID-19 travel restrictions and other precautions, the overdue and anticipated epidemic commenced in 2024. There were 605 notifications of pertussis in 2024, representing a 980% increase from the preceding year and the highest number of notifications since 2018 (Figure 13a). The number of notifications per month increased significantly towards the end of 2024 and were continuing to increase at the end of the year (Figure 13b). Thus, 2024 may represent the beginning of a pertussis epidemic cycle rather than its peak. Encouraging and enabling vaccination of priority populations, infants and pregnant people, is essential to reduce the number of infections and hospitalisations during periods of epidemic pertussis such as this.

Public health management of pertussis centres on prevention of disease in infants under the age of 6 months who have a case fatality rate of up to 1 in 125.[17] This is achieved through identifying cases who are at highest risk of transmitting disease to infants. In 2024, 204 notified cases (37%) were classed as priority cases, defined as children under 12 years of age, childcare workers or pregnant people in the last month of gestation.[16] Of these 204 priority cases,140 were fully vaccinated and a further 29 were partially vaccinated.

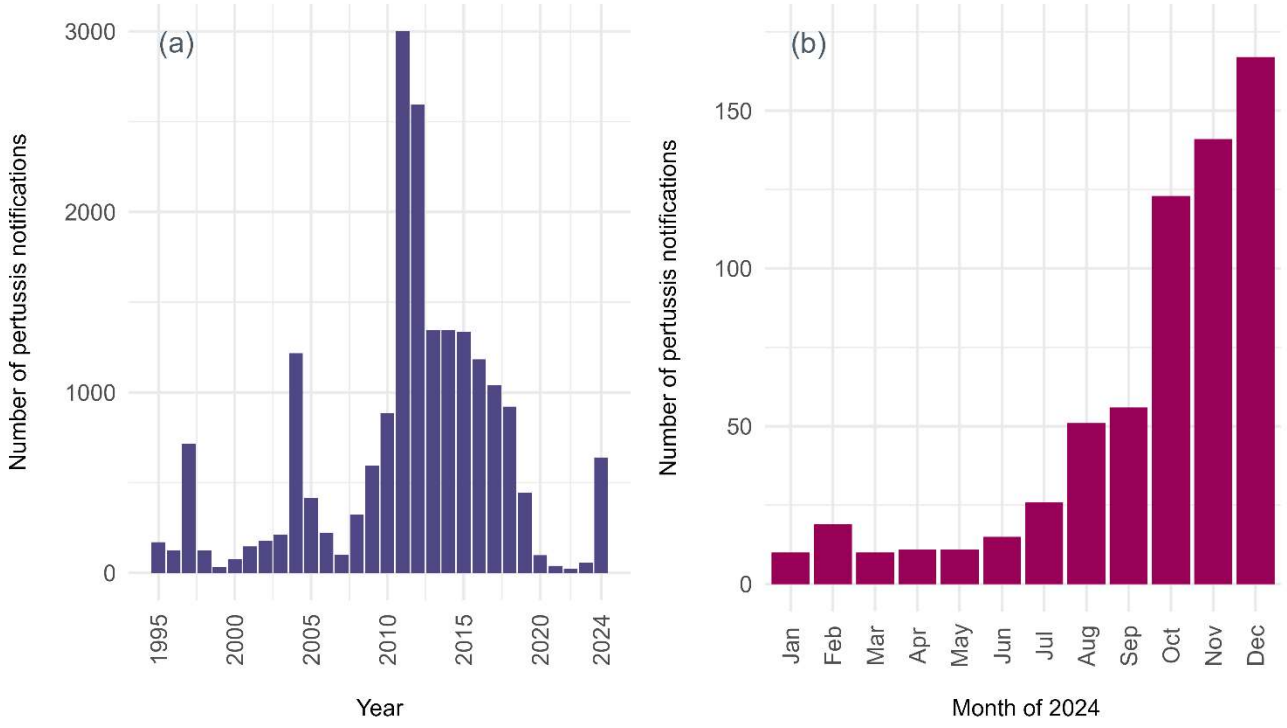


Figure 13 (a): Number of pertussis notifications per year from 1995 to 2024. (b) Number of pertussis notifications per month in 2024.

Measles – low cases numbers but a high operational demand

There were five cases of measles notified to Boorloo PHU in 2024. This is stable from six notifications in 2023. Four of the five notifications were acquired overseas with one case occurring in a household contact of a known case. Four cases were unvaccinated with the immunisation status of the fifth case unknown. Two of the cases were born in Australia with the remaining three born overseas.

Measles cases are highly infectious and so require significant public health follow up. Boorloo PHU follows up all contacts of a measles case to ensure they are immune, provide information and to facilitate provision of post-exposure prophylaxis where appropriate. In 2024 the five cases produced 16 household contacts at highest risk of infection and 440 exposed contacts requiring follow up. The five cases attended 12 public exposure sites requiring media releases, and seven additional healthcare related exposure sites.

Invasive Meningococcal disease – MenB dominates again

There were 11 notifications of invasive meningococcal disease in 2024, an increase from a record low of four cases in 2023 (Figure 14), but still lower than the 5-year pre-COVID mean of 19.6 notifications per year. Invasive meningococcal B infections made up eight of the notifications, with two of the remaining infections caused by Meningococcal Y and the last by Meningococcal W135. This is in keeping with recent trends of Meningococcal B predominance, likely a result of widespread vaccination for Meningococcal A, C, W, Y. In contrast, Meningococcal B vaccination is currently only funded for Aboriginal Australians and other high-risk groups. Despite vaccine availability, Aboriginal peoples remain overrepresented among Meningococcal B cases in 2024. Two of the six cases of Meningococcal B in 2024 were Aboriginal.

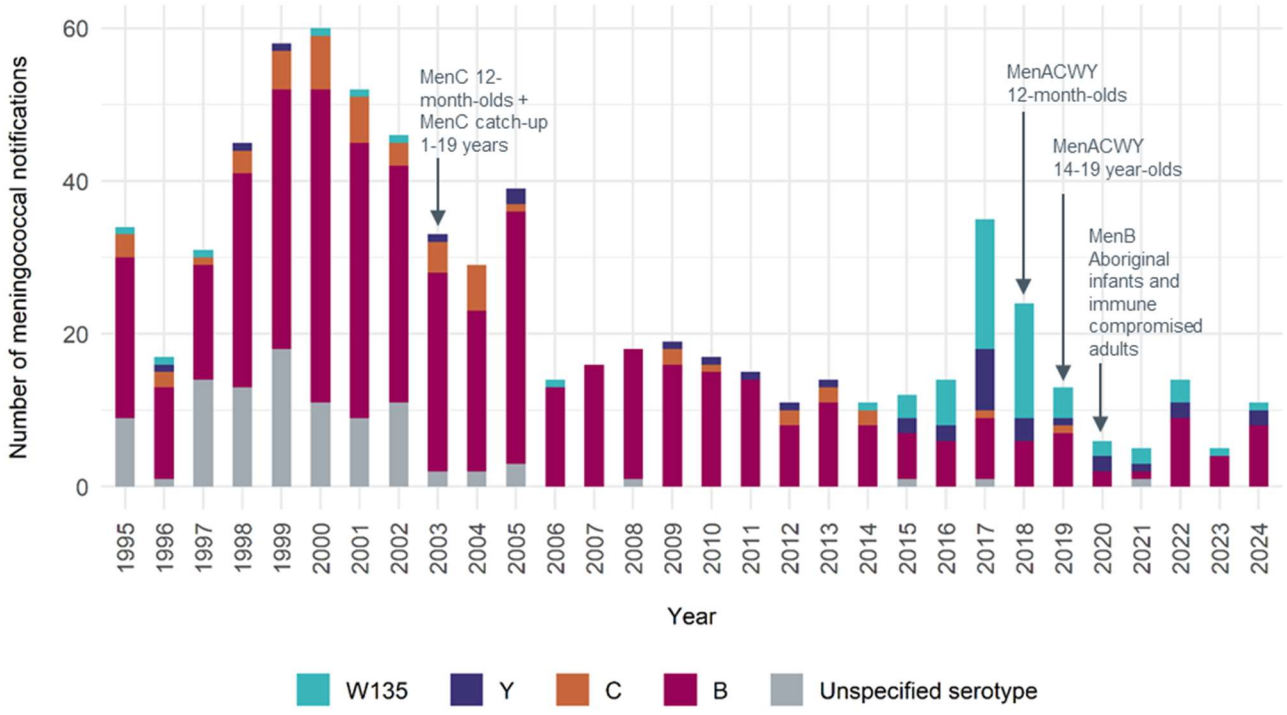


Figure 14: Number of meningococcal notifications per year from 1995 to 2024, by serotype.

Invasive Pneumococcal Disease – ongoing vaccination gaps

There were 151 notifications for invasive pneumococcal disease (IPD) in 2024, relatively stable from 165 notifications in 2023, and the second highest number of notifications on record. IPD showed a bimodal age distribution in 2024, with 41 notifications (27.2%) among children aged 0-9 years and 53 notifications (35.1%) occurring among adults aged 60-80 years (Figure 15).

IPD is a vaccine preventable disease and PCV13 is given to all infants as part of the NIP. PCV13 is also funded for people aged 70 years and above. Aboriginal children receive an additional dose of PCV13 at 6 months and a dose of PPV23 vaccine at 4 years of age. The *Streptococcus pneumoniae* causing invasive infections in 2024 were vaccine-preventable serotypes in 84 cases (36 covered by both PCV13 and PPV23, and 48 by PPV23 alone), non-vaccine-covered serotypes in 40 cases, and untypable in 27 cases. The most common serotypes identified were 19F, 3 and 8. Only 24.4% of notifications were age-appropriately vaccinated for pneumococcal disease. In 2024, most notifications among the 0-9-year age group were untypable, while in those aged 50-80 years, the majority of cases were caused by serotypes covered only by the PPV23 vaccine.

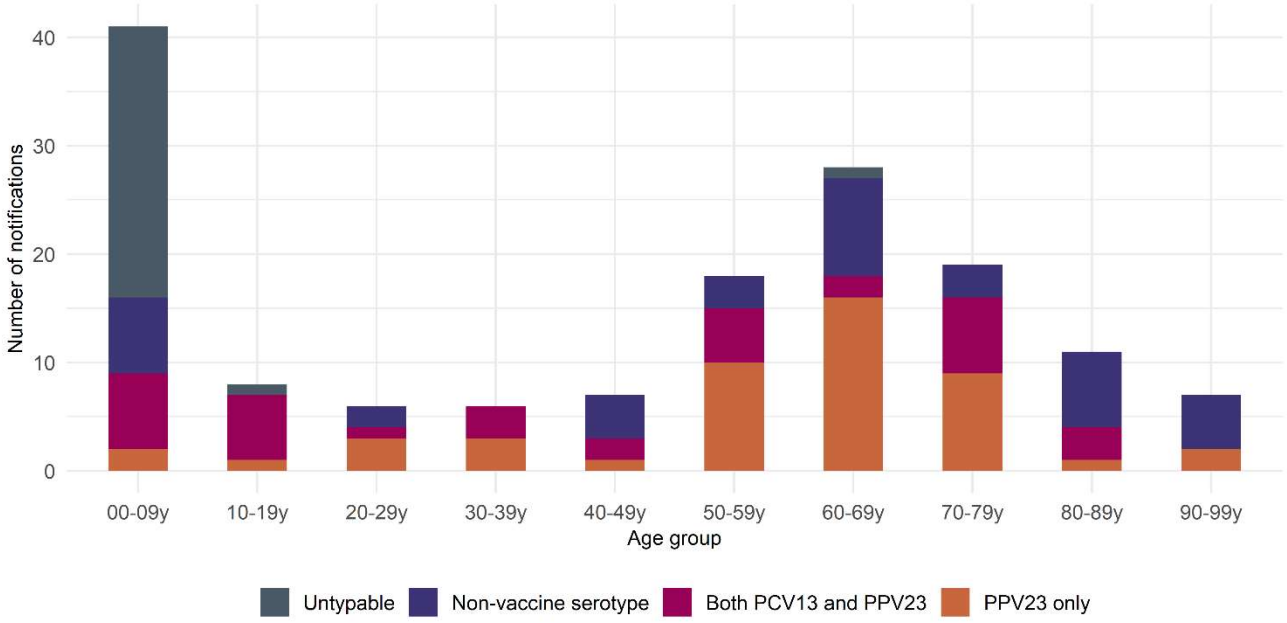


Figure 15: Notifications of IPD in 2024, categorized by age group and serotype, indicating which vaccines cover the causative serotypes.

Mumps – gradual return to pre-pandemic numbers

Boorloo PHU received nine notifications for mumps in 2024. This was the highest number of notifications for mumps since 2019, but was still below the pre-COVID-19 5-year average of 25.4 notifications per year. Of the nine cases, four were aged between 30-39 years, four between 40-49 years with the remaining case aged 60-69 years. This age distribution is typical of individuals who would not have been exposed to wild type mumps but would also not have been fully vaccinated.[18] Four of the nine cases were Australian born. Six of these cases were acquired overseas, two cases were locally acquired, and one was acquired interstate. One case was known to be partially vaccinated against mumps while the vaccination status of the remaining eight cases was unknown.

Enteric Diseases – crypto spikes, travel bugs rise

Cryptosporidiosis makes a comeback

Cryptosporidiosis is an enteric disease caused by the parasites of the *Cryptosporidium* genus. Cryptosporidium oocytes are shed in the stool of infected individuals during the infectious period of the disease and can cause infection through oral ingestion, usually in contaminated water.[19] Cryptosporidiosis typically occurs in cyclical outbreaks in Australia with outbreaks often seen in summer months due to increased recreational water exposure.

In 2024 there were 651 notifications of cryptosporidiosis, the highest number of notifications on record (Figure 16). The 2024 outbreak showed a typical bimodal age distribution with 40.9% of cases occurring in children aged less than 10 years and 35.8% of cases occurring in adults aged between 30 and 49 years, likely representing transmission between children and parents. OzFoodNet is responsible for the investigation and management of locally acquired cryptosporidiosis outbreaks in Australia. There were only two identified sources of outbreaks requiring follow up in 2024: one swimming pool and one childcare centre.

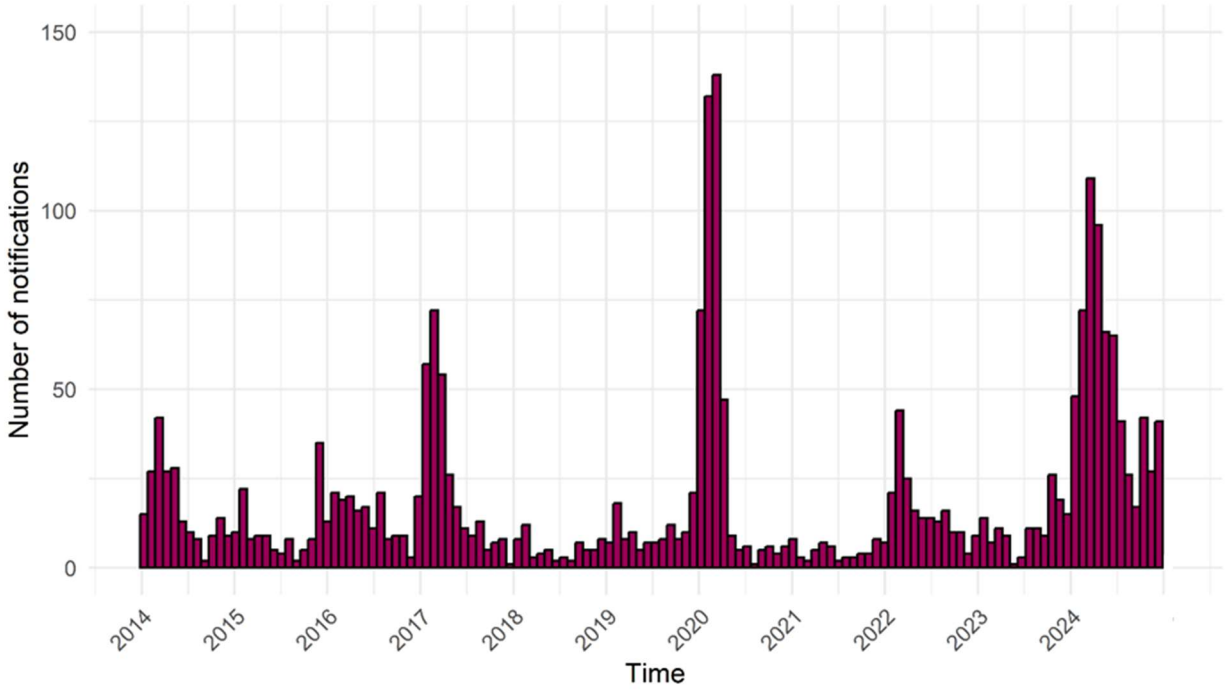


Figure 16: Number of cryptosporidiosis notifications per month from 2014 to 2024.

Gastroenteritis outbreaks in childcare, schools and residential aged care

In 2024 Boorloo was notified of 128 possible gastroenteritis outbreaks in childcare facilities, schools and RACH. This represents a 33% (n=63) decrease in notifications compared to 2023. Of these notifications, 110 were confirmed outbreaks of gastroenteritis (defined as two or more people in the same facility becoming unwell with vomiting and/or diarrhoea within a 24-hour period, not explained by other medical causes). RACH were the site of 62 notified gastroenteritis outbreaks, while 59 notifications came from childcare centres and seven from schools. The causative pathogen was unknown in 71.9% of outbreaks, with norovirus detected as the causative agent in 26.6% of notifications and two outbreaks being attributed to a foodborne pathogen. There were 23 hospitalisations related to gastroenteritis outbreaks (21 in RACH, 2 in childcare) and 4 RACH deaths attributable to these outbreaks.

Enteric diseases increasing with transmission at home and abroad

There were 6,284 notifications for enteric diseases in 2024, an increase from 5,557 cases in 2023. *Campylobacter* notifications made up 59.8% of all enteric notifications, followed by *Salmonella* species at 20.1% and then cryptosporidiosis with 10.4%. There were four food venues identified as likely sources of enteric disease outbreaks in Perth in 2024, all caused by *Salmonella typhimurium*.

A significant burden of enteric disease is related to overseas travel. International travellers are advised to take appropriate precautions when travelling to countries with endemic enteric diseases, which includes vaccination (Hepatitis A and typhoid are vaccine preventable), food safety and hand hygiene. Of the 6,284 notifications for enteric diseases in 2024, 1,920 (30.6%) acquired the disease in Australia, while 1,131 (18.0%) cases acquired the disease overseas. The number of overseas acquired cases has continued to increase since travel resumed in 2022. The proportion of each notifiable enteric disease acquired locally, interstate and overseas are illustrated in Figure 17. All cases of typhoid and paratyphoid fever were acquired overseas in 2024.

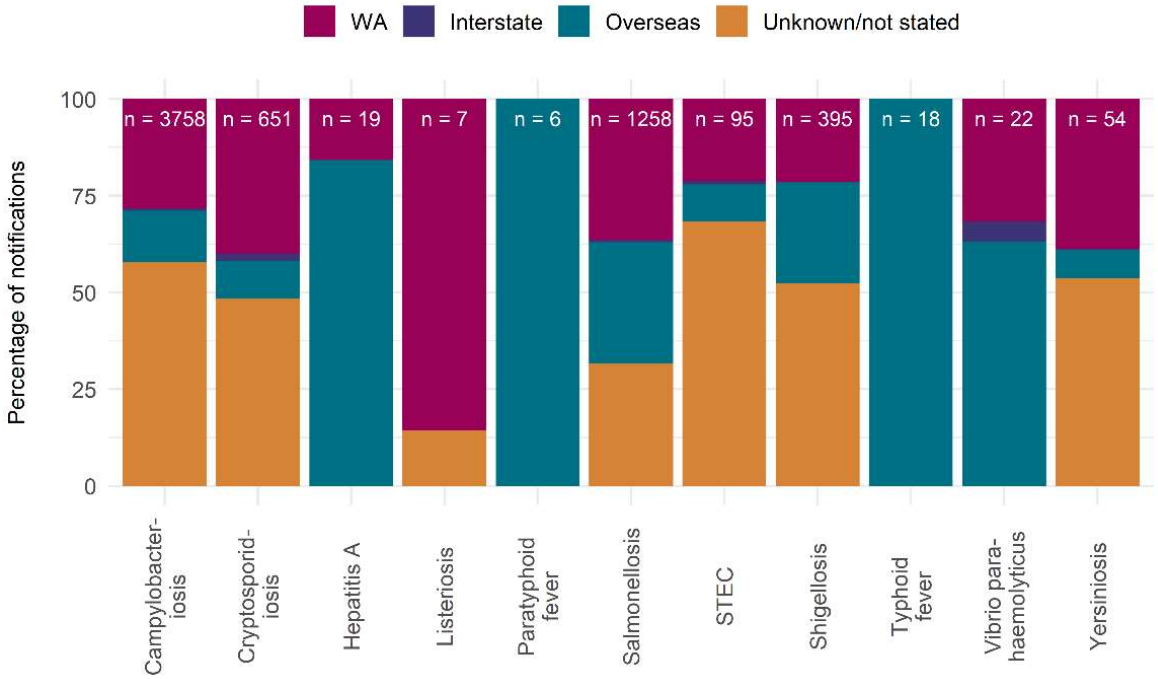


Figure 17: Enteric disease by place of acquisition in 2024; STEC= Shiga-toxin producing *Escherichia coli*.

Three cases of locally acquired hepatitis A

Notably there were three cases of Hepatitis A in 2024 with no history of recent travel. Hepatitis A is a viral enteric disease transmitted through the faecal-oral route. Most cases of Hepatitis A in Australia are acquired overseas with the remainder typically occurring from household contact with returned, infected travellers or consumption of contaminated food which can cause large outbreaks. In two of the three cases, no cause of the local infection was identified. These cases both were noted to regularly consume frozen berries. The third case was likely (though not confirmed) to have been acquired through household contact with returned travellers from Africa. Whole genome sequencing demonstrated that this case was closely related to a circulating strain in Africa.

Vector-borne diseases – dengue, MVE concerns

Dengue Fever – travellers at risk of a growing global arbovirus epidemic

There were 452 notifications of dengue fever in 2024, the second highest annual incidence on record for Perth (Figure 18). This represents a 182.5% increase in notifications compared to 2023. There were 335 (74.1%) notifications with recent travel to Indonesia, 27 (6.0%) with recent travel to Thailand and 24 (5.3%) with recent travel to India.

In December 2023, the World Health Organization (WHO) declared the global increase in dengue transmission a grade 3 global health emergency.[20] This follows a doubling of global dengue cases reported each year since 2021. In response, the WHO have launched a global strategic preparedness, readiness and response plan to tackle dengue and other *Aedes*-borne arboviruses.

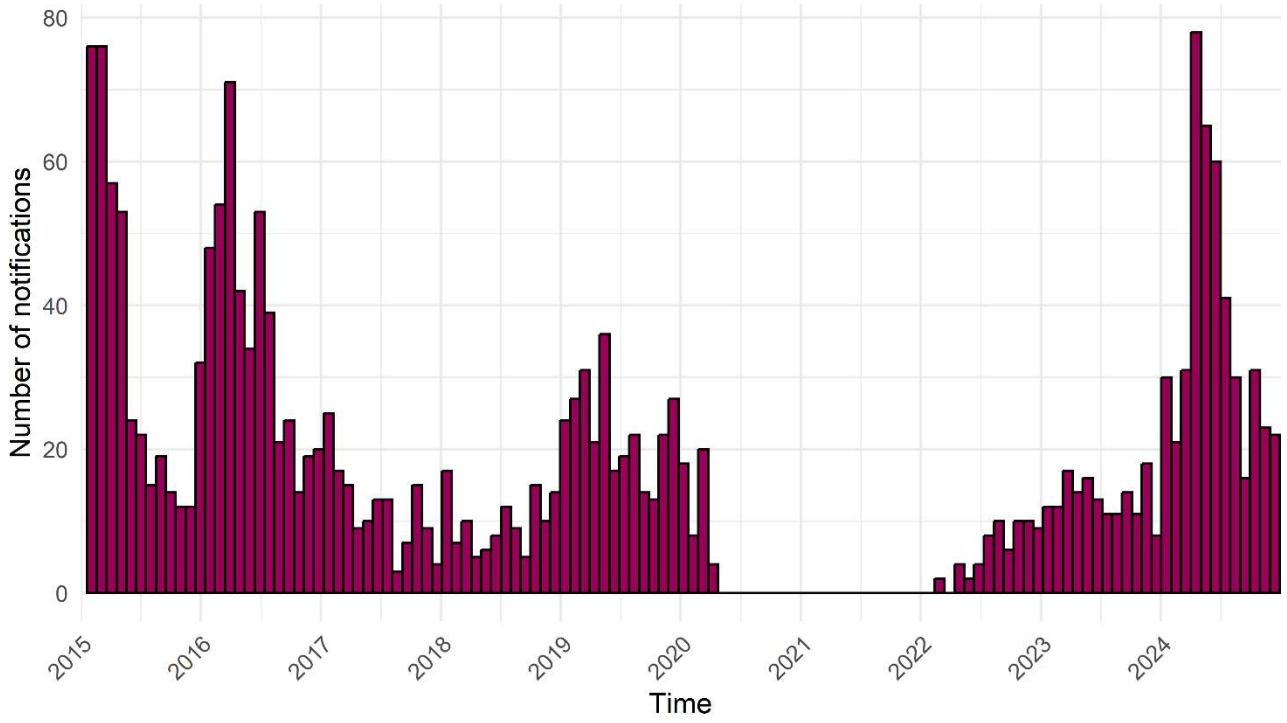


Figure 18: Number of dengue virus notifications per month from January 2015 to December 2024.

Murray Valley encephalitis – severe disease, exposures in northern WA

There were two cases of Murray Valley Encephalitis (MVE) notified to Boorloo PHU in 2024. Both cases were likely acquired in the north of the Pilbara region. Both cases required hospitalisation and intensive care and died from their illness. There is no immunisation available for MVE and the disease can only be prevented through prevention of mosquito bites. These cases prompted the dissemination of media releases from CDCD with advice on measures to prevent mosquito bites.[21] Sentinel chicken and mosquito surveillance systems detected circulation of MVE in the Pilbara, East Kimberley and West Kimberley regions in the period immediately preceding these cases.[22]

Zoonotic Diseases – dairy and dust illnesses

Brucellosis – first case in 7 years, from unpasteurised dairy products

Brucellosis is considered a re-emerging disease in Australia, associated with the hunting of feral pigs in Northern NSW and Southern Queensland.[23] There was one notification of brucellosis in Perth in 2024, the first in metropolitan Perth since 2017. The infection was acquired overseas and caused by *B. melitensis*. Brucellosis is a zoonotic disease characterised by an acute, febrile, non-specific illness and occasionally leads to chronic disease with formation of chronic suppurative granulomas in any organ. *Brucella* species are transmitted through contact with contaminated animals or the consumption of contaminated animal products, commonly unpasteurised dairy while abroad. Unpasteurised milk consumption abroad was thought to be the exposure pathway for this case.

Q fever – an agricultural disease in metropolitan Perth

There were nine cases of Q fever in Perth in 2024, the highest on record since 1993 (Figure 19a). Q fever is a zoonotic disease usually associated with exposure to dust contaminated by secretions of infected animals, which can spread across wide areas carried by winds.

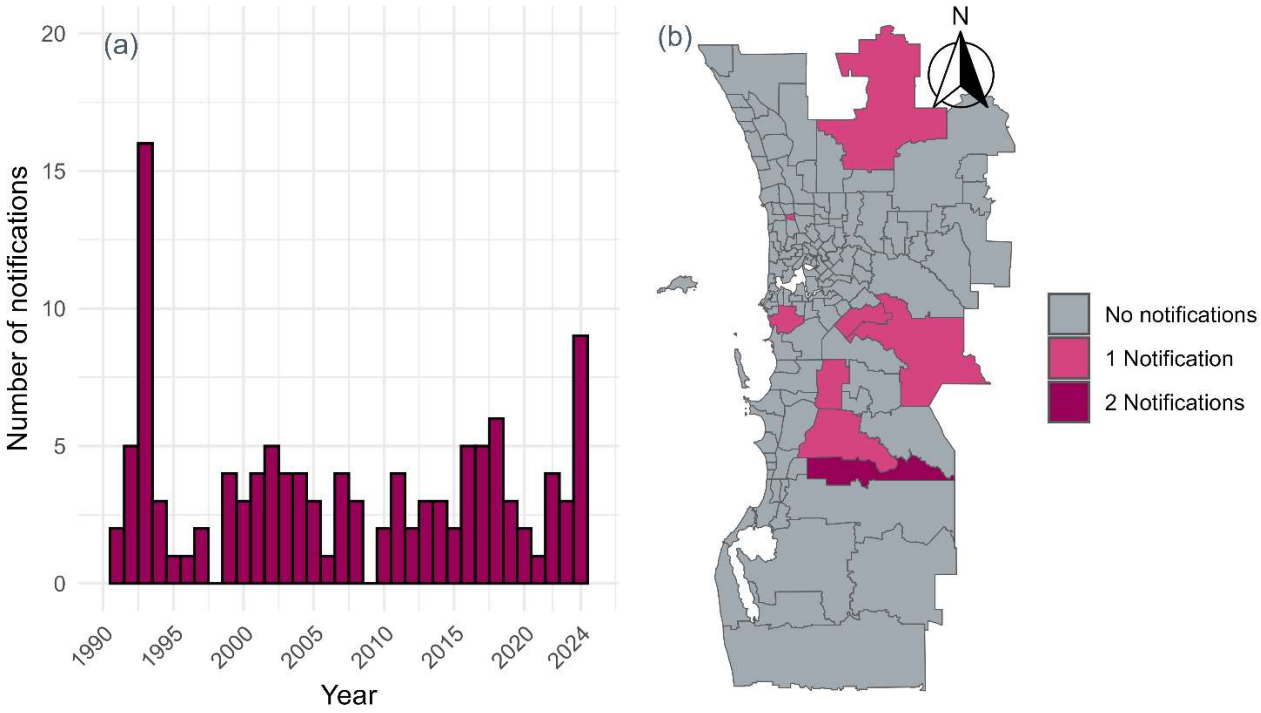


Figure 19: (a) Number of notifications per year of Q fever from 1990 to 2024, (b) Map of Q fever notifications by postcode in 2024.

All cases notified in 2024 were acquired in WA. None of the cases had received a prior Q fever immunisation, though only one had an occupation involving close animal contact. Of the nine cases, four occurred in postcodes classified as inner regional and two occurred in postcodes directly bordering an inner regional area (Figure 19b).[24] The increase in cases may be due to changes in testing or awareness, or may relate to changes in behaviours such as increased dwelling near animals due to urban sprawl in Perth, or increased hobbyist livestock ownership.[25]

Emerging and Newly Notifiable diseases

Acute post-streptococcal glomerulonephritis – a community outbreak in metropolitan Perth

There were 11 cases of acute post-streptococcal glomerulonephritis (APSGN) in 2024, a 4.5-fold increase in notifications compared to 2023. Of these cases, 81.8% were in Aboriginal people. The median age of cases was 6 years with a range from 4 to 32 years of age.

APSGN is a significant, immune-mediated renal injury occurring typically after skin or pharyngeal Group A streptococcal infection. Outbreaks of APSGN can occur and Aboriginal communities are disproportionally affected, reflecting ongoing inequities in the social and environmental[26] determinants of health, and access to healthcare. APSGN is an example of the need for a holistic approach to closing the gap in Aboriginal health and wellbeing.

The 11 notified cases in 2024 included a complex cluster of six cases from four epidemiologically linked households (Figure 20). Following identification of two cases in household 1, contact tracing led to the detection of one further confirmed case, one probable and one suspected case through clinical assessment. Eight contacts were provided with preventive antimicrobials. A notification in household 3 was geographically linked to these cases. Six household contacts of this case were provided antimicrobial prophylaxis. Clinical notification of APSGN in this cluster allowed for Boorloo PHU to identify other cases and provide antimicrobial prophylaxis in a timely manner, preventing further disease.

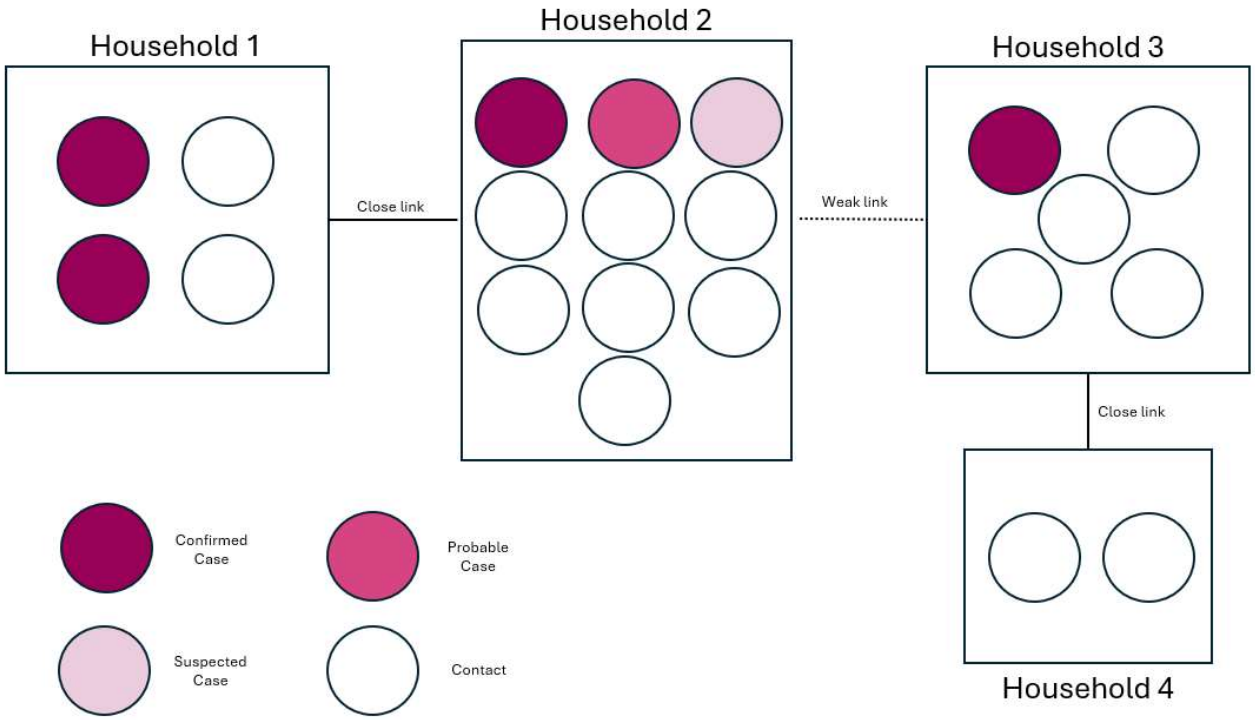


Figure 20: Diagrammatic representation of APSGN cluster in Perth in 2024.

Perth's growing diversity reflected in notifications

The population of WA is rapidly growing with this growth concentrated in metropolitan Perth. The estimated resident population of WA has increased by 426,619 people (17.0%) in the ten years from the start of 2014 to the start of 2024. Importantly 54.7% of this increase is from overseas migration.

Of the 48,943 notifications received by Boorloo PHU in 2024, country of birth was known for 40,754. Of these notifications, 37.5% were born overseas, and 7,023 (17.2%) were born in a country where the English language is not presumed to be at a "competent" level.[27] Individuals from these countries can be considered culturally and linguistically diverse (CaLD).[28] The number and proportion of notifications identified as CaLD are steadily increasing (Figure 21).

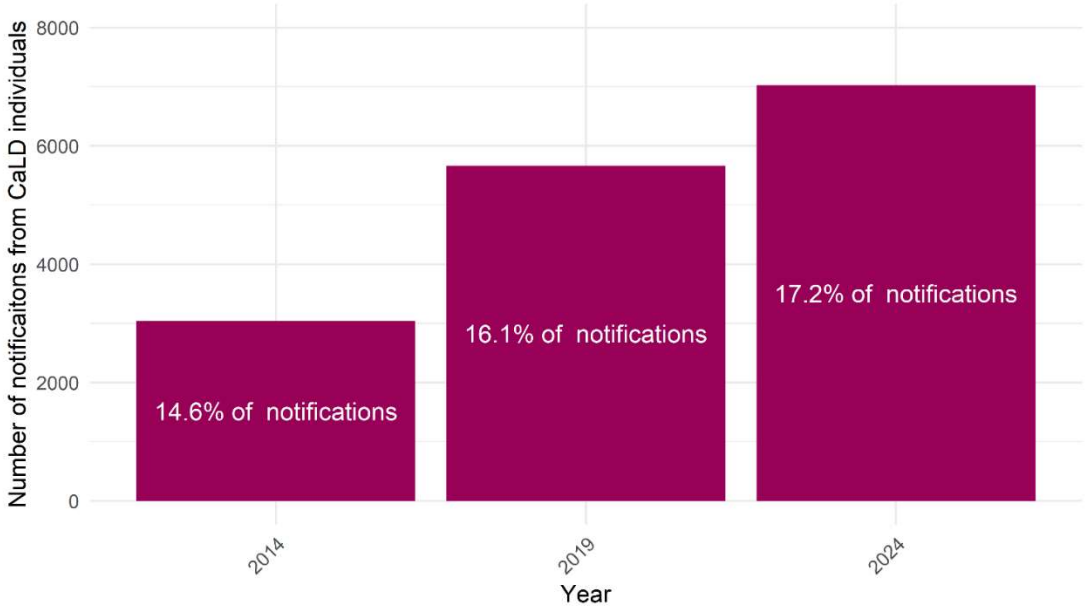


Figure 21: Number of notifications related to CaLD individuals in Perth per year for 2014, 2019 and 2024 with proportion of total notifications for that year inset.

Public Health Communications – keeping it simple

Communication is central to the public health management of cases and contacts. Communication modalities used by Boorloo PHU include phone calls, texts, and emails with information sheets as well as mass media communications facilitated by CDCD. Ensuring communications are understood by recipients is vital to effective public health messaging.

To address concerns regarding the complexity of information material provided to the public, Boorloo PHU undertook a project in 2024 to reshape its public communications to improve readability and comprehension for consumers in Perth. This included reducing the overall word count and the number of words per sentence, as well as using plain language and reducing medical jargon. In collaboration with the NMHS Publications Team, Boorloo PHU also added images and improved the graphic design elements in each information sheet. This program enables all consumers to engage fully with our public health information.

Immunisation

Annual Immunisation data summary – increased coverage among Aboriginal one-year-olds, but reduced coverage elsewhere

In 2024, immunisation coverage rates in Perth were 91.6% at 12 months of age, 89.0% at 24 months of age and 92.5% at 5 years (60 months) of age. Unfortunately, these rates have fallen from 2023 figures, with absolute reductions of 0.7%, 1.5% and 0.8% respectively.

For Aboriginal children in Perth, immunisation coverage was 85.8% at 12 months of age, 81.2% at 24 months of age and 92.3% at 5 years (60 months) of age in 2024. Compared with 2023, this represents a 1.1% absolute increase in immunisation coverage among those 12 months of age, but a 2.4% and 1.7% decrease in immunisation coverage among those 24 months and 60 months of age respectively.

Annual immunisation coverage for children at ages 12, 24 and 60 months was calculated as the number of children documented as “fully immunised” according to AIR (Appendix 3)[29], divided by the number of children enrolled with Medicare (as reported by AIR), annualised based on quarterly AIR coverage reports.

The immunisation coverage rate in Perth is higher than the overall immunisation rate of WA for all age categories; however, Perth’s immunisation rate remains lower than the national immunisation rate in all age categories (Figure 22).

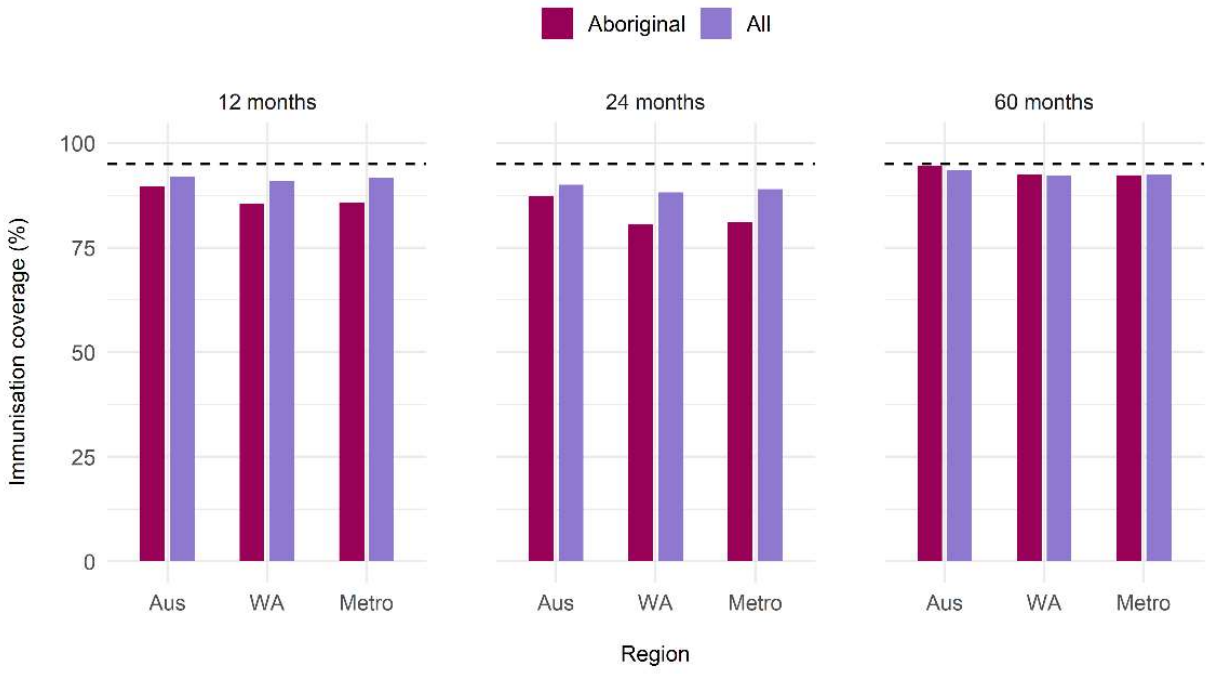


Figure 22: Immunisation coverage by age cohort and region in 2024. The dotted line represents the national target of 95% immunisation coverage.

Examining immunisation trends in Perth longer term, Figure 23 highlights a concerning trend of decreasing immunisation rates following the COVID-19 pandemic across all age categories, though it is particularly apparent among those aged below 24 months. This trend is reflected nationally.[30] This may highlight increasing vaccine hesitancy among newer parents, potentially related to vaccine misinformation, mistrust or fatigue, or may represent

increasing challenges in accessing vaccination. This trend is similarly present among the Aboriginal community. Notably, the definition of “fully vaccinated” differs between age groups (see Appendix 3) so direct comparison between age groups may be misleading.

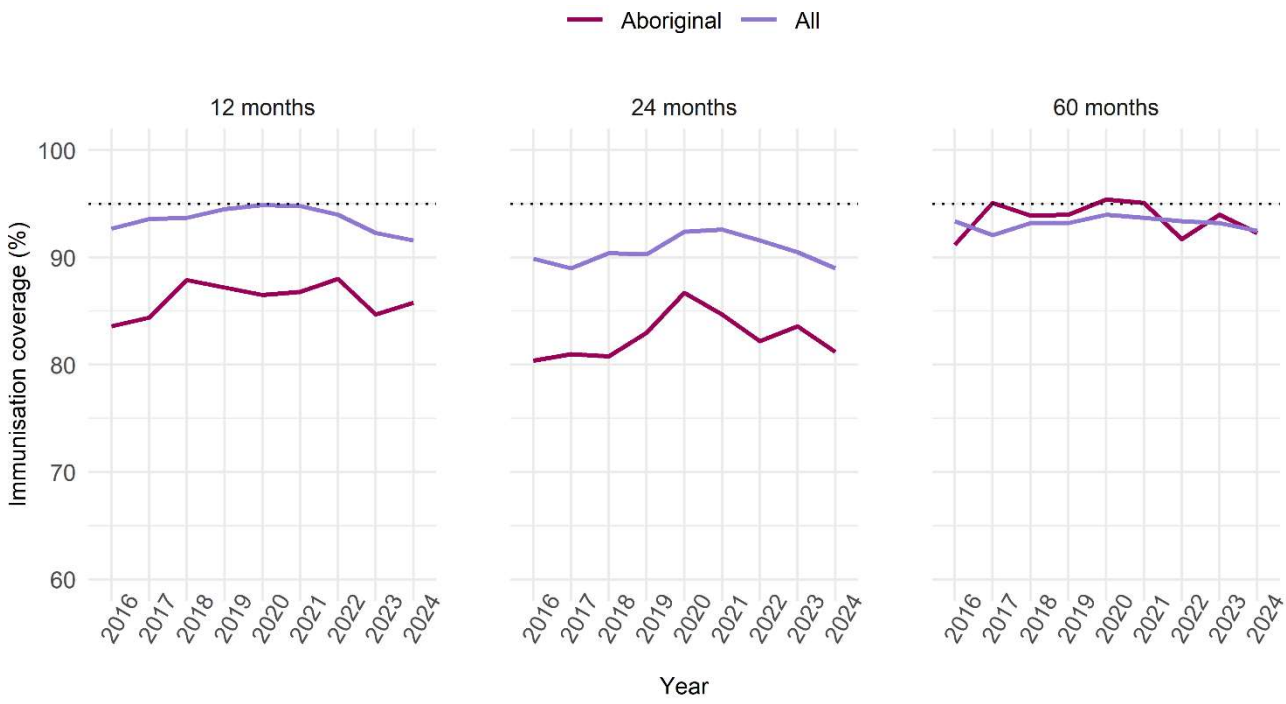


Figure 23: Perth metropolitan immunisation coverage by age cohort and year. The dotted line represents the national target of 95% immunisation coverage.

Immunisation projects for priority groups

Moorditj Start is a program delivered by Boorloo PHU which provides culturally safe immunisation support to families of Aboriginal infants with a view to commencing the WA immunisation schedule on time. In this program Boorloo PHU’s Aboriginal Health Team assist families by linking them with immunisation providers or by facilitating a home visit to provide immunisation. In 2024, Moorditj Start followed up 865 families when their child reached 6 weeks of age. Among the families successfully contacted, 20% were linked with an immunisation provider (of which 79% requested that Boorloo PHU book the appointment); and 10% requested a home visit. Of the families successfully contacted, 87% of children received their first dose of diphtheria-tetanus-pertussis immunisation on time.

The **Moorditj Kids** program supports Aboriginal families whose children are overdue for immunisation and offers a culturally safe home visiting service staffed by Aboriginal health liaison officers and immunisation nurses. In 2024, 1216 families were followed-up by letter, phone and/or SMS. Among the 449 families successfully contacted by phone or SMS, 45% were linked with an immunisation provider, and 35% requested a home visit.

The **Priority Communities Project** centres on the active follow up of children who are overdue for immunisation in local government areas with low immunisation coverage. Boorloo PHU followed up 560 children in low coverage areas in 2024 and supported an additional 1,462 children with pre-school entry requirements.

Immunisation Catch-ups – increasing demand, automated solutions

Individuals who have not received appropriate immunisation for age as per the WA immunisation schedule are recommended to commence a vaccination catch-up plan with their immunisation provider. Catch-up plans can be complex, negotiating vaccine interactions and spacing to ensure expected immunogenicity of vaccination. Boorloo PHU helps immunisation providers to prepare immunisation catch up plans upon request. In 2024, Boorloo PHU completed 1,511 immunisation catch-up plans. Of these requests, 537 were considered standard and had a median time to completion of 15 days. The remining 974 requests were considered urgent and had a median time to completion of 8 days.

Demand for catch up vaccination has increased considerably in the past 5 years with the 1,511 catch ups completed in 2024 representing a 54.1% increase from the 5-year average of 980 requests per year. In response, the Medical Director of Boorloo PHU has developed a novel computer algorithm to assist in the timely completion of a significantly increased number of immunisations catch-up plans, named CARL.

Cold chain breaches – large increase in reported breaches

A cold chain breach is defined as the occurrence of vaccine storage temperatures outside the recommended range of 2 to 8°C. Perth immunisation providers are required to notify Boorloo PHU of cold chain breaches affecting government-funded vaccines. Boorloo PHU provides advice on whether vaccines should be discarded and, when affected vaccines have been used, Boorloo PHU provides advice on repeat administration, if required. Boorloo PHU managed a total of 776 cold chain breaches in 2024, of which 18 required revaccination advice. This represents an increase in activity of 67.6% compared to the 463 cold chain breaches managed in 2023. This is likely related to an annual cold chain audits being made mandatory for all immunisation providers, rather than a select subset, which increased detection of breaches.

Vaccine wastage in Perth metropolitan area due to cold chain breaches cost WA Health $532,000 in 2024. To minimise the risk of cold chain breaches, immunisation providers are required to perform a vaccine cold chain management self-audit at least once every 12 months. Boorloo PHU collaborates closely with more than 1,000 metropolitan immunisation providers to assist with this process. Following completion of the survey, providers immediately receive tailored automated feedback. The Boorloo PHU Immunisation Team Clinical Nurse Specialist provides customised follow-up, including targeted education where needed.

Rabies and Australian Bat Lyssavirus – increasing requests for post-exposure prophylaxis

Boorloo PHU provides advice to doctors and practice nurses regarding post-exposure prophylaxis (PEP) for rabies and authorises the use of WA Department of Health-funded immunoglobulin and vaccine supplies according to national guidelines. In 2024, Boorloo PHU received 293 requests for advice regarding rabies PEP. After assessment of the request, rabies PEP was required and arranged by Boorloo PHU for 272 individuals. This equates to a population rate of rabies PEP of 11.4 per 100,000 persons in 2024. This is a substantial increase compared to the PEP rate of 9.0 per 100,000 in 2023. Human rabies immunoglobulin was provided in 106 cases equating to a population human rabies immunoglobulin rate of 4.4 per 100,000 persons in 2024.

In 2024, Indonesia remained the most common country in which rabies-prone exposures reported to Boorloo PHU occurred, accounting for 53.6% of requests (Table 2). Dogs were the most common animal causing rabies-prone exposures, causing 48.1% of exposures, followed by monkeys causing 24.9% of exposures.

Table 2: Individuals sustaining rabies prone injuries by animal and location notified in 2024.

Country of exposure	Animal causing exposed						
	Dog	Monkey	Cat	Bat	Squirrel	Other	Total
Indonesia	78	47	18	6	5	3	157
Thailand	18	10	9	0	1	1	39
Vietnam	13	0	12	0	0	0	25
Philippines	2	10	1	0	0	1	14
Sri Lanka	6	1	6	0	0	0	13
Zimbabwe	3	2	0	0	0	0	5
Australia	7	2	3	0	0	0	12
India	3	1	2	0	0	0	6
Malaysia	5	0	3	0	0	0	8
Türkiye	1	0	0	0	0	0	1
Georgia	2	0	0	0	0	0	2
South Africa	1	0	0	0	0	0	1
Pakistan	1	0	0	0	0	0	1
Morocco	1	0	0	0	0	0	1
Myanmar	0	0	1	0	0	0	1
China	0	0	0	6	0	0	6
Cambodia	0	0	0	0	0	1	1
Total	141	73	55	12	6	6	293

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Appendix

Appendix 1: Communicable disease notification rate by geographic health service area

Notifiable Disease	2024 notification rate per 100,000 population					
	NMHS	EMHS	SMHS	Metro	WA	National
Blood -borne diseases						
Hepatitis B (newly acquired)	0.5	0.6	0.5	0.5	0.6	0.3
Hepatitis B (unspecified)	13.8	24.9	15.9	18.2	17.8	20.3
Hepatitis C (newly acquired)	1	7.4	8.8	5.7	6.1	3.1
Hepatitis C (unspecified)	14.4	27	31.3	24.2	25.8	24..1
Hepatitis D	0.1	0.8	0.8	0.5	0.6	0.4
Enteric diseases						
Campylobacteriosis	166	149.6	156.3	157.6	164	142.4
Cholera	0	0	0	0	0	<0.1
Cryptosporidiosis	44.5	20.1	16.7	27.3	27.1	51.6
Hepatitis A	0.7	1.4	0.3	0.8	0.7	0.9
Hepatitis E	0	0	0	0	0	<0.1
Listeriosis	0.4	0.3	0.3	0.3	0.3	0.2
Paratyphoid fever	0.1	0.5	0.1	0.3	0.2	0.4
Salmonellosis	65.6	44.1	48	52.8	55.3	45.0
Shiga toxin-producing E. coli	4.1	4.9	2.9	4	7	3.7
Shigellosis	15	22.1	12.5	16.6	18.4	10.9
Typhoid fever	0.5	2.1	0.1	0.9	0.9	0.9
Vibrio parahaemolyticus	0.9	0.8	0.8	0.8	0.8	<0.1
Yersiniosis	3.1	1.5	2.2	2.3	2	NN
Sexually transmitted infections						
Chlamydia	376.7	508.6	384.7	423.7	434.6	375.9
Lymphogranuloma venereum	0	0.3	0	<0.1	<0.1	NN
Gonorrhoea	123.9	224.5	139.9	162.8	177.4	163.8
Syphilis (infectious)	11.3	24.1	15.7	17	20.4	22.0
Syphilis (non-infectious)	5.7	9.5	6.2	7.1	9.4	10.9
Syphilis (congenital)	0	0	0	0	0	*<0.1
Vaccine preventable diseases						
Diphtheria	0.1	0	0	0	0	<0.1
Haemophilus influenzae type B	0	0	0	0	0	<0.1
Influenza	592.3	590.8	443	543.5	579.2	1344.3
Measles	0	0.5	0.1	0.2	0.2	0.2
Meningococcal disease (invasive)	0.5	0.5	0.4	0.5	0.4	0.5
Mumps	0.2	0.6	0.3	0.4	0.3	0.7
Pertussis	31.1	24.6	20.1	25.4	43.6	210.3
Pneumococcal disease (invasive)	5.7	7.3	6	6.3	8.8	8.7
Rotavirus	28.7	30.4	29.2	29.5	27.6	37,2
Rubella	0	0.1	0	0	0	<0.1

	NMHS	EMHS	SMHS	Metro	WA	National
Tetanus	0	0	0	0	0	<0.1
Varicella	189.4	201.5	179.1	190.3	191.9	128.9
Vector-borne diseases						
Murray Valley encephalitis virus	0.2	0	0	0.1	0.1	<0.1
Kunjin/West Nile virus	0	0	0	0	0	<0.1
Japanese encephalitis virus	0	0	0	0	0	<0.1
Barmah Forest virus	0.4	0.1	1	0.5	0.8	1.2
Chikungunya virus	0.1	0.3	0.9	0.4	0.4	0.3
Dengue virus	20.1	17.4	19.2	19	19.1	8.7
Malaria	2.2	2.8	1.1	2.1	2	1.7
Rickettsial disease (typhus)	0.9	1.8	1.5	1.4	1.8	NN
Ross River Virus	3.6	2.3	5	3.6	7.4	12.4
Zika	0	0	0	0	0	NN
Zoonotic diseases						
Leptospirosis	0	0	0	0	0	0.5
Psittacosis	0	0	0	0	0	3.2
Q Fever	0.1	1	0.1	0.4	0.5	0.5
Other diseases						
Brucellosis	0	0.1	0	0	0.1	<0.1
Creutzfeldt-Jakob disease	0.4	0	0.1	0.2	0.2	NN
Haemolytic uraemic syndrome	0	0	0	0	0	<0.1
Legionellosis	1.8	2.8	2	2.2	2.3	3.1
Leprosy	0.1	0	0	0	0	<0.1
Melioidosis	0	0	0.1	0	0.2	NN
Tuberculosis	7.2	11.5	6.2	8.3	7.6	5.9
Acute rheumatic fever	0	0	0	0	0.1	NN
COVID-19	554.1	572.6	479.0	536.3	541	1259.9
Invasive Group A Streptococcus	4.6	6.9	6.6	6	8.4	6.7
Acute Post-Streptococcal Glomerulonephritis	0.2	0.8	0.4	0.5	1.6	NN
Respiratory Syncytial Virus	324.8	304.7	227.9	286.7	312.6	646.9
Mpox	0.7	1.1	0.8	0.9	0.8	5.2
Candida Auris	0.1	0.3	0.3	0.2	0.2	NN

Data were retrieved from WANIDD; disease rows were excluded where no cases occurred locally, statewide, and nationally in the past 5 years. Data for COVID-19, rheumatic heart disease, antibiotic resistant organisms and HIV are collected and managed separately. NN=not notifiable; <0.1 denotes a number less than 0.1 that would otherwise be rounded to zero. Varicella-Zoster includes chickenpox and shingles as well as those unspecified. Congenital syphilis rates are presented per 100,000 births (* denotes that numbers of births for Perth, WA and Australia are from 2022 data).

Appendix 2: Immunisation coverage by Local Government Area in 2024

Local Government Area	Age Group	Immunisation coverage for all children (%)
Armadale	12 months	92.27
	24 months	87.91
	60 months	93.03
Bassendean	12 months	95.65
	24 months	92
	60 months	91.5
Bayswater	12 months	93.93
	24 months	88.86
	60 months	93.44
Belmont	12 months	91.45
	24 months	87.7
	60 months	91.41
Cambridge	12 months	94.03
	24 months	90.22
	60 months	93.68
Canning	12 months	92.6
	24 months	88.3
	60 months	95.01
Claremont	12 months	90.91
	24 months	90.29
	60 months	95.58
Cockburn	12 months	92.3
	24 months	89.65
	60 months	91.2
Cottesloe	12 months	89.8
	24 months	81.43
	60 months	93.1
East Fremantle	12 months	>95.00*
	24 months	94.74
	60 months	>95.00*
Fremantle	12 months	88.38
	24 months	84.47
	60 months	91.28
Gosnells	12 months	90.17
	24 months	89.45
	60 months	93.68
Joondalup	12 months	90.71
	24 months	90.05
	60 months	91.6
Kalamunda	12 months	89.81
	24 months	90.25

	60 months	91.08
Kwinana	12 months	92.19
	24 months	90.28
	60 months	94.64
Mandurah	12 months	89.61
	24 months	86.72
	60 months	90.08
Melville	12 months	91.98
	24 months	90.78
	60 months	92.27
Mosman Park	12 months	92.21
	24 months	>95.00*
	60 months	94.94
Mundaring	12 months	86.94
	24 months	87.79
	60 months	88.91
Murray	12 months	87.06
	24 months	84.9
	60 months	88.85
Nedlands	12 months	92.45
	24 months	93.63
	60 months	95.43
Peppermint Grove	12 months	NA*
	24 months	NP*
	60 months	NP*
Perth	12 months	92.25
	24 months	81.1
	60 months	85.95
Rockingham	12 months	90.42
	24 months	86.86
	60 months	91.75
Serpentine-Jarrahdale	12 months	92.18
	24 months	86.79
	60 months	91.38
South Perth	12 months	91.71
	24 months	90.48
	60 months	91.75
Stirling	12 months	93.08
	24 months	89.91
	60 months	92.72
Subiaco	12 months	94.48
	24 months	89.62
	60 months	92.11

Swan	12 months	91.62
	24 months	89.84
	60 months	93.26
Victoria Park	12 months	93
	24 months	89.7
	60 months	93.49
Vincent	12 months	94.15
	24 months	89.92
	60 months	92.86
Wanneroo	12 months	91.15
	24 months	89.15
	60 months	93.27
Waroona	12 months	84.62
	24 months	79.17
	60 months	91.84

*The following data suppression rules have been applied to protect the privacy of individuals as per the requirements of AIR data publication:[5]

1. Not Published (NP) indicates the number of individuals for that row is less than 25.
2. ≥ 95.00 indicates that the number of individuals for that row is between 25 and 100, and the coverage rate for that population is equal to or greater than 95%.
3. ≥ 99.00 indicates that the number individuals for that row is greater than 100, and the coverage rate for that population is equal to or greater than 99%.

Appendix 3: AIR criteria for determining whether a child is classified as fully immunised.

To be considered fully immunised:

A 12 to <15-month-old child requires three doses of **diphtheria, tetanus and pertussis vaccine**, polio, and hepatitis B vaccines; two or three doses of **Haemophilus influenza type b**; and two doses of pneumococcal vaccine.

A 24 to <27-month-old child requires four doses of **diphtheria, tetanus and pertussis vaccine**; three doses of polio, hepatitis B, and pneumococcal vaccines; three or four doses of **Haemophilus influenza type b**; two doses of **MMR**; one dose of **meningococcal C** and **varicella** vaccines.

A 60 to <63-month-old child requires a record on the AIR of dose 4 or 5 of a **diphtheria, tetanus and pertussis** containing vaccine; and dose 4 of a polio containing vaccine.

Appendix 4: List of acronyms used in this report

AIR:	Australian Immunisation Register
APSGN:	Acute Post-Streptococcal Glomerulonephritis
CaLD:	Culturally and Linguistically Diverse
CDCD:	Communicable Disease Control Directorate
DOR:	Date of receipt
EMHS:	East Metropolitan Health Service
HIV:	Human immunodeficiency virus
iGAS:	Invasive Group A streptococcus
IPD:	Invasive pneumococcal disease
MDR:	Multi-drug resistant
MMR:	Measles, mumps, rubella vaccine
MSM:	Men who have sex with men
MSORT:	Metropolitan Syphilis Outbreak Response Team
MVE:	Murray Valley encephalitis
NIP:	National Immunisation Program
NMHS:	North Metropolitan Health Service
NN:	Not notifiable
NNDSS:	National Notifiable Diseases Surveillance System
NSW:	New South Wales
ODOO:	Optimal date of onset of disease
PCR:	Polymerase chain reaction
PEP:	Post-exposure prophylaxis
PHOCUS:	Public Health Operations Covid-19 Universal System
PHU:	Public health unit
RACH:	Residential aged care home
RAT:	Rapid antigen test
RSV:	Respiratory syncytial virus
SMHS:	South Metropolitan Health Service
SOPV:	Sex on premises venue
SRT:	Syphilis Response Team
STI:	Sexually transmitted infection
WA:	Western Australia
WANIDD:	Western Australian Notifiable Infectious Diseases Database
WRA:	Women of reproductive age
WHO:	World Health Organisation