

Communicable Diseases Weekly Report

Week 26, 26 June to 2 July 2022

In this report we provide information regarding Diphtheria, invasive meningococcal disease, and a summary of notifiable conditions activity in NSW over the reporting period, Week 26, 26 June to 2 July 2022.

Due to the rapidly evolving nature of the situation, data on **COVID-19** notifications can be found separately on the NSW Health [Latest Updates on COVID-19](#) page.

For up-to-date information regarding the **Japanese encephalitis** outbreak and the NSW response, please visit the [NSW Health Japanese encephalitis page](#).

Information on notifiable conditions is available at the NSW Health [infectious diseases page](#). This includes links to other NSW Health [infectious disease surveillance reports](#) and a [diseases data page](#) for a range of notifiable infectious diseases.

Diphtheria

A case of toxigenic respiratory diphtheria due to *Corynebacterium diphtheriae* was notified in this reporting period in an unvaccinated child under the age of five from Northern NSW ([Table 1](#)). The Aboriginal child presented with a pseudomembrane of the pharynx characteristic of diphtheria, and was admitted to the paediatric intensive care unit, requiring intubation and ventilation. The child received antitoxin and is recovering, however has developed systemic complications of the infection which will be long lasting. A second case was identified in an older Aboriginal child contact of the index case, this will be counted in next week's table. The older child was initially reported to have been unvaccinated in a [media release](#), however records later showed they were partially vaccinated against diphtheria. The older child received antitoxin and was hospitalised as a precaution and did not develop serious illness.

A number of other close contacts of the children were followed up and provided with antibiotics to eliminate the bacteria from their nose and throat, preventing development of illness and potential spread from carriers within the social group. Contacts were also encouraged to ensure they were up to date with their diphtheria vaccinations and where relevant provided with vaccines.

The case in the younger child is the first case of classical respiratory diphtheria with toxin mediated illness notified in NSW this century. A case of toxigenic respiratory diphtheria was [reported in 2018](#); however, the person in this instance did not develop severe toxin-mediated symptoms as a result of their infection.

These two cases highlight the importance of vaccination in preventing diphtheria, which, prior to the introduction of the vaccine in the 1940's was a common cause of death among children. Thanks to high vaccination rates, respiratory diphtheria is now rare in Australia; however, it remains a common infection and cause of death in children in countries with low vaccination rates, and outbreaks are common in crowded settings such as refugee camps. Cases of cutaneous (skin) diphtheria occur occasionally in NSW, usually associated with overseas travel.

The disease:

Diphtheria is a contagious and potentially life-threatening infection caused by toxin-producing strains of *Corynebacteria*, which can infect the upper respiratory tract (nose and throat) or the skin. Both *Corynebacterium diphtheria* and *Corynebacterium ulcerans* can produce the toxin which causes diphtheria.

Infection of the respiratory tract (respiratory diphtheria) by toxigenic *Corynebacteria*, can result in the formation of a membrane in the back of the throat which makes it hard to breathe and swallow. Swelling of the lymph glands in the neck may also result in a characteristic 'bull neck'. Infection of the skin (cutaneous diphtheria) can result in large non-healing ulcers, often starting as smaller lesions. These occur most commonly on the legs, and cutaneous diphtheria is more common in warmer climates.

In a small number of cases the toxin may also enter the blood stream and result in damage to the heart (myocarditis) and nerves (neuropathy), which can also be fatal.

The vaccine:

Diphtheria vaccines protect against the toxin produced by the bacterium by stimulating the production of antibodies which act as antitoxin. Vaccinated people can be infected with *Corynebacteria*, without suffering the effects of the toxin and carriage of non-toxin producing *Corynebacteria* in the nose and throat is common. Asymptomatic carriage of toxin producing *Corynebacteria*, can also occur.

In NSW four doses of diphtheria vaccine are recommended for children at 6 weeks, 4, 6 and 18 months of age, with boosters at 4 years and in the first year of high school. The vaccine is provided free under the National Immunisation Program (NIP) as part of a combination vaccine with *Haemophilus influenzae* type b, hepatitis b, polio, pertussis and tetanus for infants, and pertussis and tetanus for older children and adults.

More information:

- [NSW Health Diphtheria factsheet](#)
- [Data on diphtheria in NSW](#)
- [Australian Immunisation Handbook Diphtheria chapter](#)

Invasive meningococcal disease

Two cases of invasive meningococcal disease (IMD) were notified in this reporting week ([Table 1.](#)). The cases were sporadic and occurred in children of different ages from different regions of NSW.

The first case occurred in an infant from South Western Sydney. The second case was in an adolescent from the Mid North Coast. Both infections were caused by meningococcal serogroup B.

Both children were up to date with their routine immunisations, however there is no evidence that either case was eligible to have received the meningococcal B vaccine as part of their schedules under the national immunisation program.

IMD is a rare, but serious and often fatal acute bacterial infection caused by *Neisseria meningitidis*. Meningococcal bacteria are a respiratory commensal and often reside harmlessly in the back of the nose and throat in a state known as carriage. There are several strains of meningococcal bacteria, known as serogroups, some of which (meningococcal A, B, C, W, X and Y) are more likely to cause invasive disease. In Australia most IMD is currently caused by meningococcal B, W or Y. Meningococcal C was a common cause of IMD in Australia prior to the introduction of the meningococcal C vaccine to the immunisation schedule in 2003.

Meningococcal bacteria require close and usually prolonged contact, such as living in the same household, for transmission to occur. Certain activities however, such as intimate kissing or sharing smoking apparatus can also result in transmission.

Children under five, particularly those under two, and people aged 15-24 years are most at risk of IMD. Young children are at increased risk due to the naivety of their immune systems, while adolescents and young adults are at increased risk because carriage rates are highest in this age group and they are more likely to participate in activities which increase the likelihood of bacterial transmission.

Incidence of IMD tends to be highest during late winter and early spring, and in [past years](#), higher rates of IMD have coincided with a 'big' flu season. This is likely due, in part, to the fact that a recent viral illness can increase your risk of developing IMD, and that factors such as increased time spent indoors which increase flu transmission, can also increase transmission of meningococcal bacteria by placing people in prolonged close contact with one another. One of the cases reported this week had recently recovered from COVID-19.

Vaccines against the most common strains of meningococcal bacteria associated with IMD in Australia are included as part of the schedule under the National Immunisation Program; however eligibility varies by serogroup.

In NSW meningococcal vaccines are provided free of charge under the National Immunisation Program (NIP) to the following groups:

Vaccine	Groups eligible for free vaccine
Meningococcal ACWY vaccine	All children at 12 months of age Children aged 15-19 years (via the School Vaccination Program or their GP) People with certain medical conditions that cause increased risk of infection (including asplenia, hyposplenia, complement deficiency and those receiving eculizumab treatment)
Meningococcal B vaccine	Aboriginal children < 2 years of age People with certain medical conditions that cause increased risk of infection (including asplenia, hyposplenia, complement deficiency and those receiving eculizumab treatment)

Anyone outside of these groups wishing to protect themselves against meningococcal disease can access the vaccines via private prescription from their GP.

More information on meningococcal disease is available from:

- NSW Health [meningococcal disease website](#) and [meningococcal disease factsheet](#)
- The [Australian Immunisation Handbook](#) for more information on meningococcal vaccines
- NSW Health [meningococcal disease data](#)

Summary of notifiable conditions activity in NSW

The following table summarises notifiable conditions activity over the reporting period alongside reports received in the previous week, year to date and in previous years (Table 1).

Table 1. NSW Notifiable conditions from 26 June- 2 July 2022, by date received*

		Weekly		Year to date				Full Year		
		This week	Last week	2022	2021	2020	2019	2021	2020	2019
Enteric Diseases	Campylobacter	212	223	5255	6301	4571	5680	11954	10008	11482
	Cryptosporidiosis	12	8	231	304	396	417	444	549	669
	Giardiasis	24	31	634	1005	1118	2043	1504	1871	3328
	Paratyphoid	1	0	7	0	17	33	1	17	39
	Rotavirus	6	10	206	188	368	361	356	500	1777
	STEC/VTEC	2	2	75	64	51	36	126	115	79
	Salmonellosis	49	41	1810	1872	1972	2143	3096	2883	3555
	Shigellosis	6	12	152	42	371	448	60	494	867
	Typhoid	1	0	23	1	32	40	2	37	64
Other	Monkeypox	2	1	9	0	0	0	0	0	0
Respiratory Diseases	Influenza	9470	14531	99882	50	7325	39906	124	7488	116430
	Legionellosis	7	1	129	112	81	89	213	170	153
	Tuberculosis	5	7	217	309	282	284	558	625	589
Sexually Transmissible Infections	Chlamydia	533	500	12568	14826	13950	16093	25369	27243	32475
	Gonorrhoea	203	234	5041	4759	5106	5977	7624	9882	11688
Vaccine Preventable Diseases	Diphtheria	1	0	3	0	0	1	0	0	1
	Meningococcal Disease	2	0	9	14	9	16	23	22	59
	Mumps	1	1	4	3	50	28	6	56	57
	Pneumococcal Disease (Invasive)	22	17	210	239	162	242	387	358	690
Vector Borne Diseases	Barmah Forest	1	0	42	67	158	44	111	271	63
	Ross River	2	9	536	526	1710	395	659	1990	595
Zoonotic Diseases	Q fever	1	1	87	104	115	143	188	207	248

* Notes on Table 1: NSW Notifiable Conditions activity

- Only conditions which had one or more case reports received during the reporting week appear in the table.
- Due to the rapidly evolving nature of the situation, data on COVID-19 notifications can be found separately on the NSW Health [Latest Updates on COVID-19](#) page.
- Data cells represent the number of case reports received by NSW public health units and recorded on the NSW Notifiable Conditions Information Management System (NCIMS) in the relevant period (i.e. by report date).
- Note that [notifiable disease data](#) available on the NSW Health website are reported by onset date so case totals are likely to vary from those shown here.
- Cases involving interstate residents are not included.
- Chronic blood-borne virus conditions (such as HIV, hepatitis B and C) are not included here. Related data are available from the [Infectious Diseases Data](#), the [HIV Surveillance Data Reports](#) and the [Hepatitis B and C Strategies Data Reports](#) webpages.
- Notification is dependent on a diagnosis being made by a doctor, hospital or laboratory. Changes in awareness and testing patterns influence the proportion of patients with a particular infection that is diagnosed and notified over time, especially if the infection causes non-specific symptoms.