



SUMMARY

Notifications summary*		
Year	2019	2018
Notifications	205	281
Deaths	12	18
Serogroup Distribution		
Serogroup B	103	119
Serogroup C	6	4
Serogroup W	53	100
Serogroup Y	42	45
Not grouped [^]	1	11

[^] NG includes where meningococcal isolates could not be identified ('not groupable'), other isolates not grouped and where serogroup was not known.

National notifications of invasive meningococcal disease (IMD) have continued to decline since 2017, following an increase in notifications in the period 2014-2017, due primarily to a hyper-virulent strain of serogroup W (MenW)¹.

In 2019, 205 cases of IMD were reported to the National Notifiable Diseases Surveillance System. The majority of cases were due to serogroup B (MenB, n=103, 50%), followed by MenW (n=53, 26%) and serogroup Y (MenY, n=42, 20%). There were 12 deaths amongst IMD cases reported during 2019.

The rate of IMD in 2019 decreased in all jurisdictions compared with 2018. MenB was the most commonly notified serogroup in all jurisdictions except for the Northern Territory where MenW was the most common.

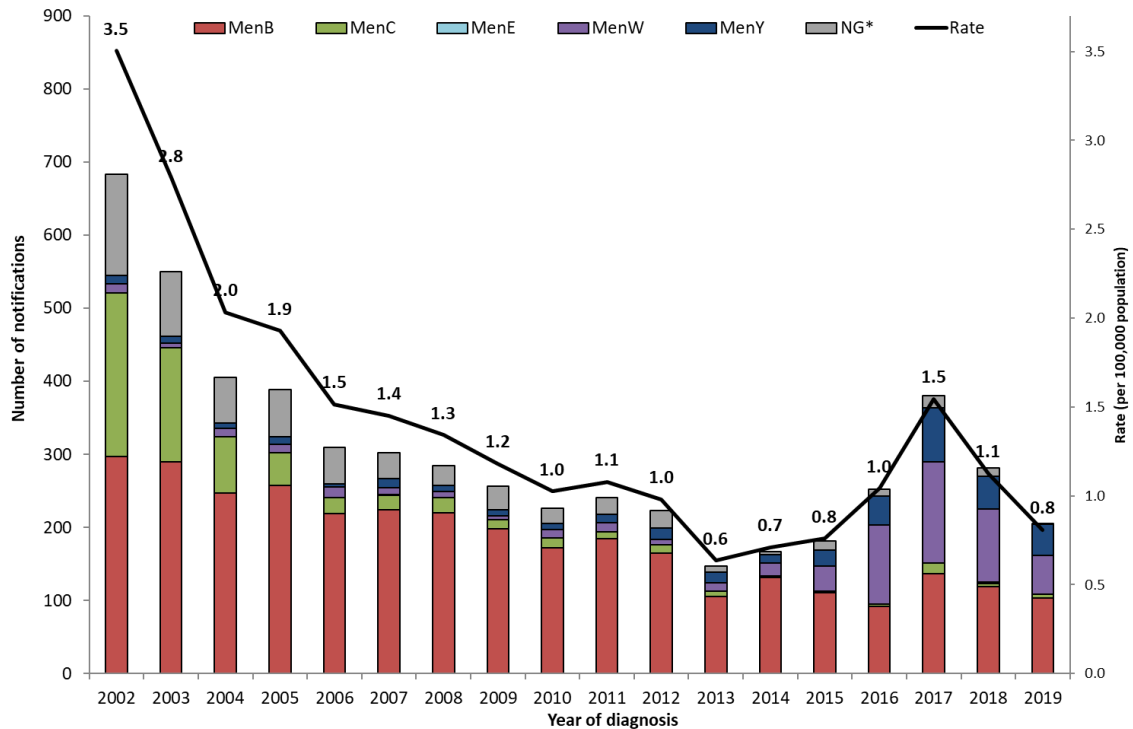
Eighteen per cent (n=36) of total cases in 2019 occurred in Aboriginal and/or Torres Strait Islander people. This is consistent with the proportion of cases reported in 2018, in which 18% (50/281) occurred in Aboriginal and/or Torres Strait Islander people.

ANALYSIS

National trends

The national incidence of IMD in Australia is low (Figure 1). Rates of IMD steadily decreased until 2013, with the predominate serogroup MenB. After 2013, the rate of IMD increased, corresponding with an increase in MenW. Since 2018, cases of IMD have declined again.

Figure 1. Annual cases and annual rate of IMD, Australia, 1 January 2002 to 31 December 2019 by serogroup



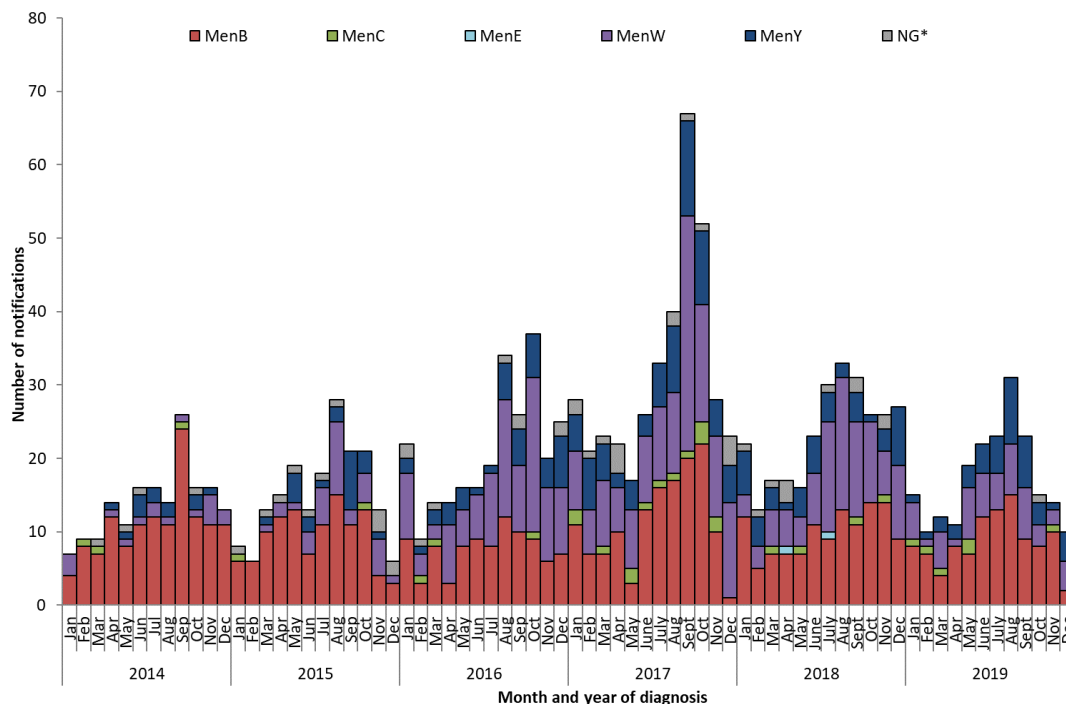
*NG includes where meningococcal isolates could not be identified ('not groupable'), other isolates not grouped and where serogroup was not known.

Seasonality

IMD tends to follow a seasonal pattern in Australia, with increased disease activity between June and September each year.

In 2019, IMD continued to follow the established seasonal pattern, with notifications peaking in August (n=31) (Figure 2).

Figure 2. Cases of IMD, Australia, 1 January 2014 to 31 December 2019, by serogroup, month and year of diagnosis



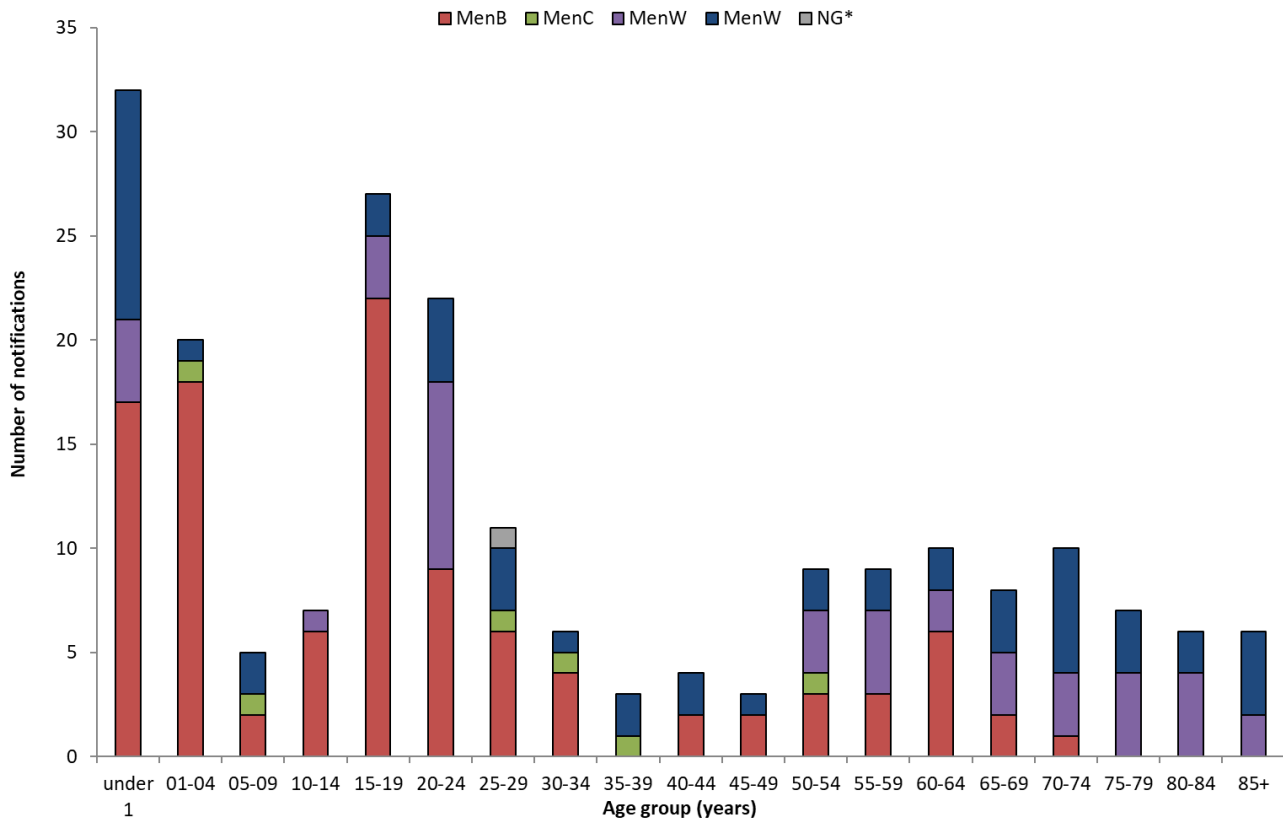
*NG includes where meningococcal isolates could not be identified ('not groupable'), other isolates not grouped and where serogroup was not known.

Age Distribution

Cases of IMD were reported across all age groups in 2019 (Figure 3). The distribution of serogroup differed by age group with MenB more common in younger people and MenW and MenY more common in older people.

The proportion of IMD cases was highest in children aged less than five years (n=52, 25%), adolescents aged 15-19 years (n=27, 13%) and young adults aged 20-24 years (n=22, 11%). Of IMD cases in children aged less than five years, the highest proportion of cases were in infants aged less than 12 months (n=32, 62%) (Figure 3).

Figure 3. Notifications of IMD, Australia, 1 January to 31 December 2019, by serogroup and age group



*NG includes where meningococcal isolates could not be identified ('not groupable'), other isolates not grouped and where serogroup was not known.

Geographical Distribution and Serogroups

In 2019, cases of IMD were notified in all jurisdictions (Table 1). The lowest rate of IMD was in the Australian Capital Territory (0.2 cases per 100,000 population) while the Northern Territory experienced the highest (2 cases per 100,000). Although the Northern Territory had the highest rate of disease, incidence has substantially reduced since a peak of 12.9 cases per 100,000 in 2017 associated with MenW outbreaks.

In 2019, MenB was the predominant serogroup reported (n=103, 50%) followed by MenW (n=53, 26%) and MenY (n=42, 20%). The proportion of cases caused by MenW has decreased nationally, following a peak in the number of notifications of MenW in 2017 (n=139, 37%), and a peak in proportion of MenW cases out of all IMD notifications in 2016 (n=108, 43%).

Table 1. Notifications and rates of IMD, Australia, 2018 and 2019, by serogroup and state and territory

State or territory	Notifications														Rate (per 100,000 population)	
	B		C		E		W		Y		NG*		Total		2018	2019
	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019	2018	2019
ACT	0	1	0	0	0	0	2	0	0	0	0	0	2	1	0.5	0.2
NSW	32	34	2	0	0	0	20	11	16	14	2	0	72	59	0.9	0.7
NT	2	1	0	0	0	0	7	4	0	0	2	0	11	5	4.4	2.0
QLD	29	18	1	0	2	0	13	9	11	18	2	1	58	46	1.2	0.9
SA	27	19	0	0	0	0	4	4	3	4	0	0	34	27	2.0	1.5
TAS	3	4	0	0	0	0	5	2	2	0	1	0	11	6	2.1	1.1
VIC	18	18	1	0	0	0	19	14	11	4	4	0	53	36	0.8	0.5
WA	8	8	0	6	0	0	30	9	2	2	0	0	40	25	1.5	1.0
Australia	119	103	4	6	2	0	100	53	45	42	11	1	281	205	1.1	0.8

*NG includes where meningococcal isolates could not be identified ('not groupable'), other isolates not grouped and where serogroup was not known.

Severity

In 2019, there were 12 IMD deaths reported, which was lower when compared with the number of deaths reported in 2018 (n=18). Of the 12 deaths reported in 2019, five were due to MenB, four MenW, two MenY and one where the serotype was unable to be grouped (Table 2).

Table 2. Deaths due to IMD by sergroup for 2019 and 2018

Serogroup	Year	
	2019	2018
B	5	5
W	4	11
Y	2	1
NG	1	1

Aboriginal and Torres Strait Islander peoples

In 2019, 17% (n=36) of IMD cases were reported as being Aboriginal and/or Torres Strait Islander people compared to 56 IMD cases reported among Aboriginal and/or Torres Strait Islander people in 2019. Of the 36 cases of IMD reported in Aboriginal and/or Torres Strait Islander people, 50% (n=18) were MenB, 33% (n=12) were MenW, 14% (n=5) MenC and 3% (n=1) MenY (Table 3).

The majority of IMD cases in Aboriginal and/or Torres Strait Islander people were among those aged 0-4 years (n=21, 58%), of which 62% (n=13) were aged less than 12 months. Eight (22%) cases were amongst Aboriginal and/or Torres Strait Islander people aged 5-19 years and the remaining seven (19%) cases were spread across those aged between 20-54 years. The age distribution among Aboriginal and/or Torres Strait Islander people cases is different compared with non-Indigenous cases. Approximately 78% (28/36) of cases in Aboriginal and/or Torres Strait Islander people were aged less than 15 years, whilst 22% (36/165) of cases in non-Indigenous people were aged less than 15 years.

Table 3. IMD notifications by Indigenous status. Note that cases with an Indigenous status field of “not stated” are not included in this table.

IMD serogroup	Year	Aboriginal and/or Torres Strait Islander people	Non Indigenous	Not stated	Total
B	2018	14	101	4	119
	2019	18	82	3	103
C	2018	0	4	0	4
	2019	5	1	0	6
E	2018	0	2	0	2
	2019	0	0	0	0
W	2018	33	66	1	100
	2019	12	40	1	53
Y	2018	1	43	1	45
	2019	1	41	0	42
NG*	2018	2	8	1	11
	2019	0	1	0	1

BACKGROUND

IMD typically manifests as meningitis or sepsis. It mainly affects children aged younger than 5 years and adolescents (15–19 years), although age distribution differs by serogroup. IMD typically exhibits a seasonal peak of cases in winter and early spring.

The bacterium causing this disease, *Neisseria meningitidis*, is carried by a proportion of the population without developing disease. The prevalence and duration of asymptomatic nasopharyngeal carriage of meningococci vary over time and in different population and age groups. Adolescents and young adults have the highest carriage rates, peaking in 19-year olds, and thus this age group play an important role in transmission.²

The bacterium *N. meningitidis* is divided into multiple serogroups, determined by differences in the surface polysaccharides of the outer membrane capsule. Globally, serogroups A, B, C, W, Y and X most commonly cause disease. Four serogroups of meningococcal bacteria (B, C, W, and Y) account for most cases of IMD in Australia. Historically MenA was the cause of substantial epidemics in the African meningitis belt, however since the roll out of MenA conjugate vaccine in the region the proportion of IMD caused by MenA has declined.^{3,4,5}

The clinical manifestations of meningococcal septicaemia and meningitis may be non-specific and can include sudden onset of fever, rash (petechial, purpuric or maculopapular), headache, neck stiffness, photophobia, altered consciousness, muscle ache, cold hands, thirst, joint pain, nausea and vomiting. However, non-specific presentation is not uncommon for IMD, making early diagnosis challenging.

Meningococcal infections can progress rapidly to serious disease or death in previously healthy persons. A number of medical conditions are known to increase the risk of an individual developing IMD. People who survive infection can develop permanent sequelae, including limb deformity, skin scarring, deafness and neurologic deficits.

Vaccination against meningococcal disease, targeting MenC, has been provided free of charge for babies at 12 months of age through the National Immunisation Program (NIP) in Australia from 2003 to 30 June 2018. In 2018, the NIP schedule changed to replace MenC with meningococcal ACWY (MenACWY) vaccination for babies at 12 months of age. MenACWY immunisation has also been funded for adolescent groups under the NIP since April 2019.

Prior to the introduction of the MenACWY onto the NIP, the majority of jurisdictions provided state-based MenACWY immunisation programs in 2017 and early 2018 targeting adolescents aged 15-19 years.

For further information on IMD cases reported in Australia and MenACWY immunisation programs please see the [Department of Health Meningococcal Disease website](#).

DATA CONSIDERATIONS

Data were extracted from the NNDSS on 19 May 2020, by diagnosis date. Due to the dynamic nature of the NNDSS, data in this extract are subject to retrospective revision and may vary from data reported in published NNDSS reports and reports of notification data by states and territories.

REFERENCES

¹ Invasive meningococcal disease national surveillance report 2018

[https://www1.health.gov.au/internet/main/publishing.nsf/Content/5FEABC4B495BDEC1CA25807D001327FA/\\$File/1Jan-31Mar2018-Consol-Invasive-Men-W.pdf](https://www1.health.gov.au/internet/main/publishing.nsf/Content/5FEABC4B495BDEC1CA25807D001327FA/$File/1Jan-31Mar2018-Consol-Invasive-Men-W.pdf)

² Christensen H. et al. 2010. Meningococcal carriage by age: a systematic review and meta-analysis. *Lancet Infectious Diseases Dec 2010: 853-61.*

³ CCDM 20th edition

⁴ Australian Imm Handbook

⁵ WHO-AFRO <https://www.afro.who.int/health-topics/meningococcal-meningitis> accessed 19/8/2020