Australian Government
Department of Health

# INVASIVE MENINGOCOCCAL DISEASE NATIONAL SURVEILLANCE REPORT

**Quarter 3, 2018**
**1 July to 30 September 2018**

## SUMMARY

- Nationally the number of invasive meningococcal disease (IMD) cases and overall risk remains low.
- In the 3rd quarter of 2018, there were 94 cases of IMD reported to the National Notifiable Diseases Surveillance System (NNDSS). Of these, 34 cases were due to MenB, 45 cases were due to MenW, 10 cases were due to MenY, one was due to serogroup C (MenC), one was due to serogroup E (MenE) and three cases were yet to be classified at the time of reporting.
- The number of IMD cases reported this quarter is 33% fewer than the number reported in the same quarter of 2017 (n=141), but 17% higher compared with the 5 year rolling mean (n=80.6 cases).
- The case of MenE reported this quarter is the second case of this serogroup to be reported in Australia this year. MenE rarely causes invasive disease and prior to 2018 there were only two other cases reported in Australia in 2007 and 1997.
- The case fatality rate of IMD cases reported this quarter was 8.5% (8/94).
- In July 2018, there was a local community outbreak of MenW in the northern suburbs of Hobart (Tasmania) which included three cases of serogroup W disease that were tightly clustered geographically and temporally.

## ANALYSIS

### National trends

- The national incidence of IMD in Australia is low (Figure 1). However, in recent years the rate of IMD has increased, with 2017 displaying the highest rate (1.5 per 100,000) since 2007.
- There were 94 cases of IMD reported in the 3rd quarter of 2018, which is 68% higher compared to the IMD cases reported in the 2nd quarter of 2018 (n=56) and 33% fewer than the same quarter of 2017 (n=141).
- The case fatality rate (CFR) of IMD this quarter was 8.5% (8/94).
- Of the 94 cases reported this quarter, 16 occurred in Aboriginal and Torres Strait Islander peoples.

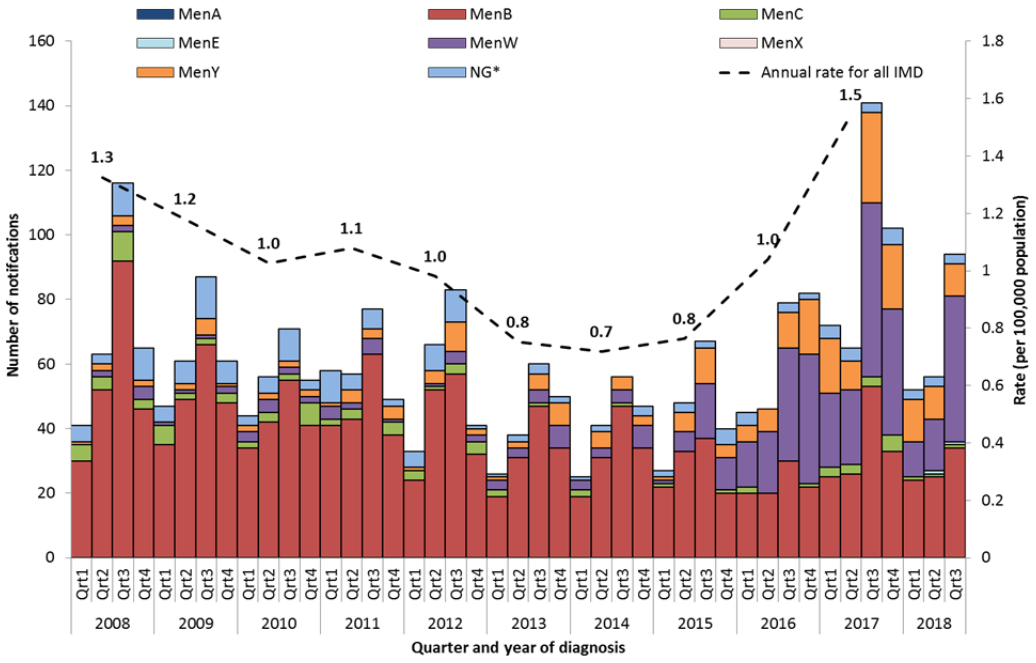


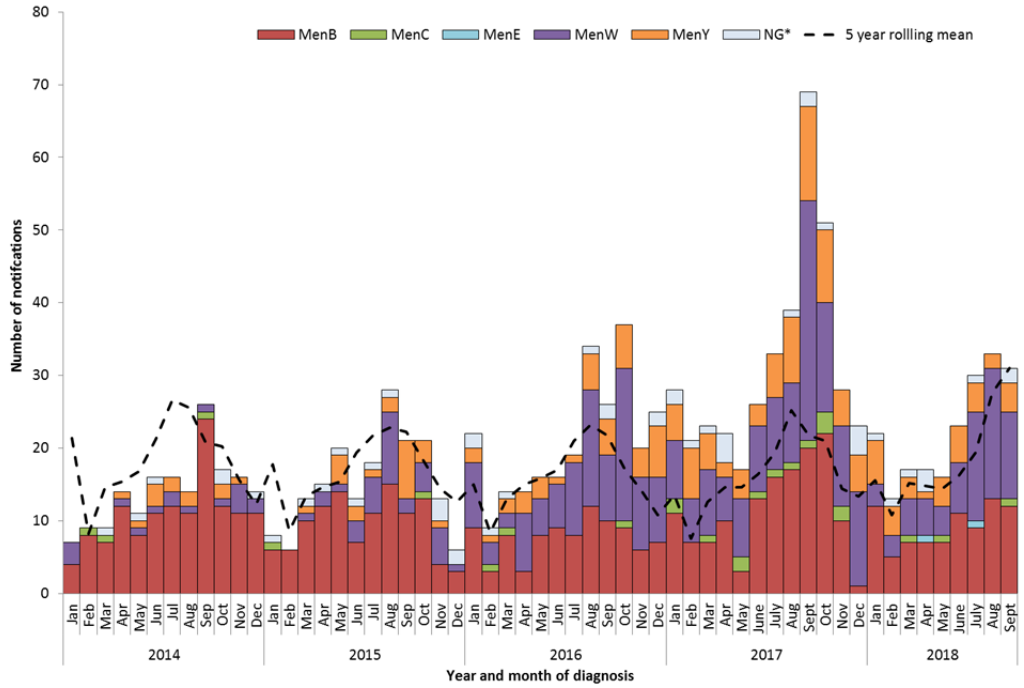

**Figure 1. Quarterly cases and annual rate of IMD, Australia, 1 January 2008 to 30 September 2018 by serogroup**

**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 (Figure 2).
- IMD notifications in the 3rd quarter of 2018 continued to follow the seasonal pattern, with notifications rising from June and reaching a peak in August.
- Compared with the 5 year monthly rolling mean (range 19.4 to 31.0 mean cases per month during quarter 3 in 2012-2016), cases of IMD reported by month for this quarter were at the higher end of the range(range 30.0 to 33.0) (Figure 2).

**Figure 2. Cases of IMD, Australia, 1 January 2014 to 30 September 2018, by serogroup, month and year of diagnosis**

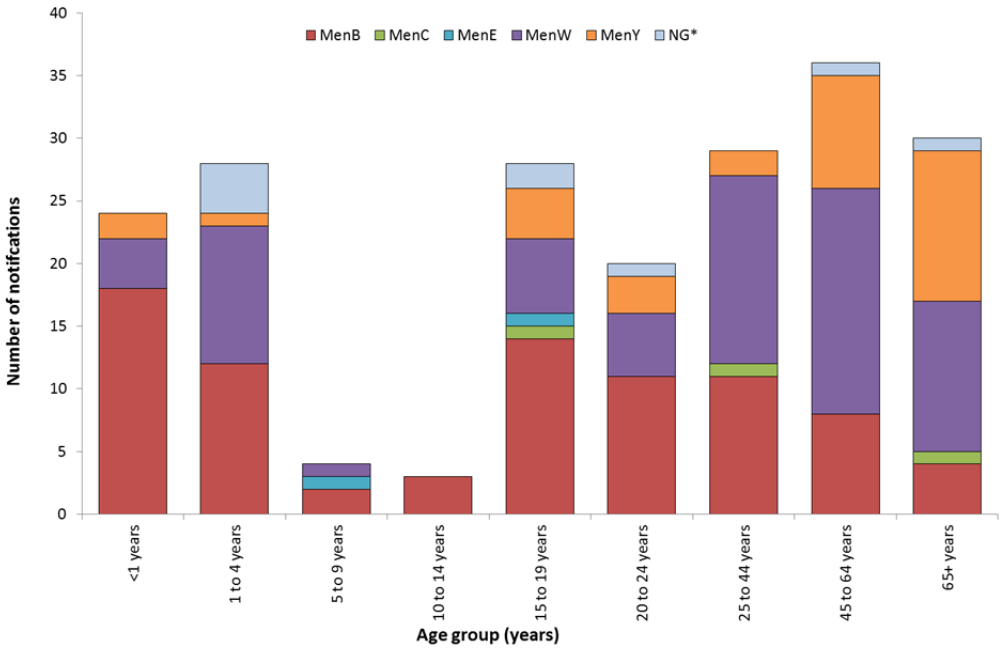



**NG includes where meningococcal isolates could not be identified ('not groupable'), other isolates not grouped and where serogroup was not known.*

## Age Distribution

- Cases of IMD were reported across all age groups in the first three quarters of 2018 (Figure 3). The median age of all IMD cases YTD was 31 years (range: 0 years to 96 years).

**Figure 3. Notifications of IMD, Australia, 1 January to 30 September 2018, 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

- In 2018 YTD, cases of IMD were reported in all jurisdictions (Table 1).
- From the period of 1 January to 30 September 2018, the Australian Capital Territory experienced the lowest rate of IMD (0.2 per 100,000 population) and the Northern Territory experienced the highest (3.2 per 100,000).

**Table 1. Notifications and rates of IMD, Australia, 1 January to 30 September 2018, by serogroup and state and territory**

| | Notifications | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| State or territory | A | B | C | E | W | X | Y | NG* | **Total** | Rate (per 100,000 population) |
| ACT | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0.2 |
| NSW | 0 | 21 | 2 | 0 | 17 | 0 | 11 | 1 | 52 | 0.7 |
| NT | 0 | 2 | 0 | 0 | 4 | 0 | 0 | 2 | 8 | 3.2 |
| QLD | 0 | 21 | 0 | 2 | 9 | 0 | 9 | 2 | 43 | 0.9 |
| SA | 0 | 18 | 0 | 0 | 3 | 0 | 1 | 0 | 22 | 1.3 |
| TAS | 0 | 3 | 0 | 0 | 5 | 0 | 1 | 0 | 9 | 1.7 |
| VIC | 0 | 11 | 1 | 0 | 15 | 0 | 10 | 3 | 40 | 0.6 |
| WA | 0 | 7 | 0 | 0 | 18 | 0 | 1 | 1 | 27 | 1.0 |
| **Australia** | **0** | **83** | **3** | **2** | **72** | **0** | **33** | **9** | **202** | **0.8** |

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

## Severity

- Of the 202 IMD cases reported up until 30 September 2018, 30% (60/202) were admitted to ICU, which was slightly less than the proportion of IMD cases reported for the same period of 2017 (32%; 88/277).

## Serogroup analyses

- The three most common meningococcal serogroups currently reported in Australia are MenB, MenW and MenY.
- From 2002 to 2015, MenB was the predominant serogroup in Australia. However, from 2016 there has been a shift in meningococcal serogroups causing invasive disease in Australia, with an increasing proportion of cases caused by MenW and MenY

### Serogroup B (MenB)

- In the first three quarters of 2018 there were 83 cases of MenB reported (Table 1), representing 41% of all IMD cases reported YTD and a decrease of 20% on the number of MenB cases reported in the same period of 2017 (n=104).
- MenB is the only serogroup with cases reported in all age groups in 2018 YTD (Figure 3). The median age of MenB cases reported YTD was 19.1 years (range: 0 years to 74 years).
- In 2018 YTD, 11% (9/83) of MenB cases were reported in Aboriginal and Torres Strait Islander peoples.

*Clinical presentation, severity and risk factors of MenB*

- This quarter there was one death due to MenB reported; a total of three deaths reported in 2018 YTD.
- In 2018 YTD, 31% (26/83) cases of MenB were admitted to an intensive care unit.
- The most common risk factors associated with MenB infection YTD in 2018 included having a smoker in the household (23%; 19/83), attending a school or university (17%; 14/83) and being a current smoker (11%; 9/83). The same common risk factors were identified for MenB cases for the same period of 2017, with the exception of being a current smoker.

### Serogroup W (MenW)

- In the first three quarters of 2018 there were 72 cases of MenW reported (Table 1), representing 36% of all IMD cases reported YTD and a decrease of 28% on the number of MenW cases reported in the same period of 2017 (n=100).
- In 2018 YTD, MenW was reported in all age groups except the 10–14 years age group (Figure 3). The median age of MenW cases reported YTD was 37.5 years (range: 0 years to 92 years).
- In 2018 YTD, 28% (20/72) of MenW cases were reported in Aboriginal and Torres Strait Islander peoples.

- In July 2018, there was local community outbreak of MenW in the northern suburbs of Hobart (Tasmania) which included three cases of serogroup W disease that were tightly clustered in geography and time. In response to this outbreak the Tasmanian Government initiated a free Meningococcal ACWY Immunisation State-wide Program that targeted persons born after 1 August 1997 and at least 6 weeks of age. Further information can be found at the Tasmanian Department of Health website. The other six cases were more widely distributed across the state and occurred across the quarter. Of these, there were three cases of B, two W and one Y. One of these W cases died of their infection.

*Clinical presentation, severity and risk factors of MenW*

- There were nine deaths due to MenW reported in 2018 YTD. Of these two were reported in the 2nd quarter of 2018 and seven were reported this quarter.
- The age of cases reported to have died from infection with MenW in 2018 YTD ranged from 16 to 60 years, with five of the deaths reported in persons aged 30 years or younger.
- In 2018 YTD, 36% (26/73) of MenW cases were admitted to an intensive care unit.
- The most common risk factors associated with MenW infection in 2018 YTD included having a chronic disease (24%; 17/72), having a current smoker in the household (8%; 6/72) or attending a school or university (7%; 5/72). These were similar to the risk factors reported in MenW cases in the same period of 2017. However, for the same period in 2017, there were more MenW cases reported as immunocompromised (n=10) compared with 2018 (n=2).

### Serogroup Y (MenY)

- In the first three quarters of 2018 there were 33 cases of MenY reported (Table 1), representing 16% of all IMD cases reported YTD and a decrease of 39% on the number of MenY cases reported in the same period of 2017 (n=54).
- In 2018 YTD, MenY was reported in all age groups except the 5–9 years and 10–14 years age groups (Figure 3). The median age of MenY cases reported YTD was 50.1 years (range: 0 years to 96 years).
- There was one case (3%) of MenY reported in Aboriginal and Torres Strait Islander people in 2018 YTD.

*Clinical presentation, severity and risk factors of MenY*

- There was one death due to MenY reported in 2018 YTD, which was reported in the 2nd quarter of 2018.
- In 2018 YTD, 15% (5/33) of MenY cases were admitted to an intensive care unit.
- The most common risk factors associated with MenY infections in 2018 YTD included having a chronic disease (30%; 10/33) and being a current smoker (12%; 4/33). These were similar to the risk factors reported in MenY cases in the same period of 2017.

### Other serogroups (Men A, C, X and E)

- Notifications of MenC have dramatically declined from 225 cases in 2002 to 14 cases in 2017 (a 94% decrease) since the introduction of the MenC vaccine in 2003. So far in 2018 here have been three cases of MenC reported in Australia.
- Serogroup A (MenA), MenE and serogroup X (MenX) are rare in Australia. Since 2002 there have been only four cases of MenA, two cases of MenE and two cases of MenX reported in Australia.
- This quarter Queensland reported a second case of IMD due to MenE. This brings the number of IMD cases reported to the NNDSS due to MenE to two in 2018 YTD. There was no epidemiologic link identified between the two Queensland cases.

## BACKGROUND

- IMD typically manifests as meningitis, sepsis or bacteraemia and mainly affects children aged younger than 5 years and adolescents (15–19 years) with a seasonal peak of cases in winter and early spring.
- The bacteria causing this disease, *Neisseria meningitidis*, are 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 have the highest carriage rates, peaking in 19-year olds, and so play an important role in transmission.[1]
- 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.
- Funded immunisation against meningococcal disease in Australia from 2003 to 30 June 2018 were targeted at MenC, with a National Immunisation Program (NIP) recommending the vaccine be administered to children at 12 months of age. In 2018, the Pharmaceutical Benefits Advisory Committee (PBAC) recommended that the MenC vaccine on the NIP be replaced with a funded MenACWY vaccine. This change was implemented by the Department of Health and jurisdictions on 1 July 2018.
- In addition to the NIP, a number of jurisdictions have also implemented state-based vaccination programs using ACWY vaccine targeting adolescents. Further information of these can be found on the Department of Health's meningococcal disease website.

## DATA CONSIDERATIONS

Data were extracted from the NNDSS on 10 October 2018, 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] Christensen H. et al. 2010. Meningococcal carriage by age: a systematic review and meta–analysis. *Lancet Infectious Diseases Dec 2010: 853-61.*