INVASIVE MENINGOCOCCAL DISEASE IN AUSTRALIA 2001-2016

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Outline

• Incidence of IMD
• Serogroup-specific incidence
• Geographical distribution of cases
• Seasonal trend
• Age-specific incidence
• Distribution by Indigenous status
• Risk factors
• Mortality
Data source

- National Notifiable Diseases Surveillance System
  Data on notifications of IMD between 2001 and 2016 were extracted from the National Notifiable Diseases Surveillance System

- Enhanced data
  Line-listed de-identified enhanced data on 237 IMD cases from 1 January 2016 to 16 January 2017 were collected from all states and territories. Enhanced fields included clinical presentation and complications.
Notifications of IMD and rates, 1991 to 2016

Source: National Notifiable Disease Surveillance System
Notifications of IMD by serogroup* and rates, 2001 to 2016

*NG includes where meningococcal isolates could not be identified (‘not groupable’), other isolates not grouped and where the serogroup was not known.
Percentage of all IMD cases, by serogroup, 2001 to 2016
Notifications of IMD by serogroup, 2013 to 2016

<table>
<thead>
<tr>
<th>Year</th>
<th>B</th>
<th>C</th>
<th>W</th>
<th>Y</th>
<th>NG*</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>106</td>
<td>8</td>
<td>11</td>
<td>15</td>
<td>9</td>
<td>149</td>
</tr>
<tr>
<td>2014</td>
<td>131</td>
<td>3</td>
<td>17</td>
<td>12</td>
<td>6</td>
<td>169</td>
</tr>
<tr>
<td>2015</td>
<td>112</td>
<td>2</td>
<td>34</td>
<td>22</td>
<td>13</td>
<td>183</td>
</tr>
<tr>
<td>2016</td>
<td>93</td>
<td>3</td>
<td>110</td>
<td>41</td>
<td>12</td>
<td>259</td>
</tr>
</tbody>
</table>

* NG = isolates that have not been grouped
Notifications of IMD by serogroup, month and year, 2014 to 2017*

*partial year year

In 2016, where data was available, 94% of IMD cases were reported as sporadic
Age profile of IMD (all serogroups) by year, 2001 to 2016
Age profile of IMD by serogroup, 1991 to 2016
Notifications of IMD by age group by serogroup, 2016
Age-specific notifications and rate of MenW notifications, 2012 to 2016
IMD distribution by Indigenous status

• Between 2010 and 2016, the rate of each serogroup reported in Indigenous populations was higher than the rate reported in non-Indigenous populations.

Table 1. Notification rates per 100,000 population, Australia, 2010 to 2016, by serogroup and Indigenous status

<table>
<thead>
<tr>
<th>2010-2016 (average)</th>
<th>B</th>
<th>C</th>
<th>W</th>
<th>Y</th>
<th>NG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous</td>
<td>2.70</td>
<td>0.12</td>
<td>0.34</td>
<td>0.09</td>
<td>0.24</td>
</tr>
<tr>
<td>Non-Indigenous and Not stated</td>
<td>0.55</td>
<td>0.03</td>
<td>0.12</td>
<td>0.08</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Table 2. Notification rates per 100,000 population, Australia, 2016, by serogroup and Indigenous status

<table>
<thead>
<tr>
<th>2016 only</th>
<th>B</th>
<th>C</th>
<th>W</th>
<th>Y</th>
<th>NG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous</td>
<td>2.02</td>
<td>-</td>
<td>1.55</td>
<td>0.31</td>
<td>-</td>
</tr>
<tr>
<td>Non-Indigenous and Not stated</td>
<td>0.35</td>
<td>0.01</td>
<td>0.43</td>
<td>0.17</td>
<td>0.05</td>
</tr>
</tbody>
</table>
IMD distribution by Indigenous status

• Between 2010 and 2016 there were 147 cases reported in Indigenous Australians.

• The proportion of all cases that were notified as Indigenous fluctuated around 10% between 2010 and 2016.

Table 3. Proportion of IMD notifications, by serogroup and Indigenous status, 2010 to 2016

<table>
<thead>
<tr>
<th>2010-2016</th>
<th>B</th>
<th>C</th>
<th>W</th>
<th>Y</th>
<th>NG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous</td>
<td>82%</td>
<td>4%</td>
<td>11%</td>
<td>3%</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Non-Indigenous and Not stated</td>
<td>70%</td>
<td>4%</td>
<td>15%</td>
<td>10%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>
Risk factors identified for 2016 IMD cases

• Information on medical risks factors was available for 112 IMD cases, of these
  • 80% had no medical risk factors, and
  • For the remaining 20% the following medical risk factors were reported: chronic disease, immunocompromised, anatomic or functional asplenia, and/or CSF leak
• Information on exposure risk factors was also collected however this field was not well complete (30%)
  • Smoking, or having a smoker in the household was the most identified exposure risk factor
Severity – clinical presentation for 2016 IMD cases

• IMD can present as:
  ❖ Meningitis
  ❖ Septicaemia
  ❖ Pneumonia
  ❖ Septic arthritis
  ❖ Pericarditis

• In 2016, of the 69 MenW cases with enhanced data, 80% (n=55) had a typical clinical presentation with either septicaemia, meningitis or a combination of both.

• The remaining 20% of MenW cases presented atypically with septic arthritis, pneumonia, epiglottis/pharyngitis or other.

• 95% of other IMD cases in 2016 presented typically.
Between 2001 to 2016, 5% of IMD cases died from the disease.


In 2016, there were 11 deaths due to IMD.

The national MenW CFR for 2016 was 6%.
Key messages (1/2)

- IMD is endemic in Australia
- MenC has significantly decreased since the introduction of the MenC vaccine
- MenB notifications are three times lower since 2002 and continue to decline
- The incidence of IMD in 2013 was the lowest reported since 1991. However, numbers have started to increase
- From 2013 there have been a steady increase in MenW
- There has also been an increase in MenY cases since 2011
Key messages (2/2)

- MenW follows a normal age and seasonal pattern of IMD with a slight variation (65 and over age group)
- The incidence of IMD is disproportionately higher among Indigenous Australians
- The most identified exposure risk factors among cases are having a chronic disease/being immunocompromised and smoking
- Septicaemia was the most common presentation of IMD, and that 20% of MenW cases presented atypically