The Changing Epidemiology of Invasive Meningococcal Disease in Ireland
Four years after introducing the MenC conjugate vaccine

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Results
Total IMD – Cases and Deaths
- Annual incidence rates of IMD have more than halved in recent years: from 14.8 cases per 100,000 in 1999 down to 5.1 cases in 2004 (Fig. 1). 
- Number of IMD associated deaths has also decreased, 17 deaths in 1999 and 23 in 2000 down to 10 in 2004 (Fig. 2). 
- Annual case fatality rates (CFR) ranged from 3% to 5% between 1999 and 2004 (Fig. 2). CFRs tended to be higher in the older age groups. 
- Between 1999-2004, the average IMD CFR in adults was 7-8%. 

Serogroup C – Cases and Deaths
- Incidence of serogroup C disease has declined from a high of 3.7 per 100,000 in 1999 to 0.1 per 100,000 in 2003 and 2004 (Fig. 1).
- In 2004, no serogroup C cases occurred in any child under 15 years of age. In 2000, 123 cases occurred in this age group (Table 1). 
- Over the past three years (2002-2004) no child or adolescent has died from serogroup C disease.
- Introduction
- Ireland had one of the highest incidence rates of invasive meningococcal disease (IMD) in Europe; >14 cases per 100,000 total population were notified per annum. 
- Over 80% of cases were laboratory confirmed – 12/100,000. 
- In 2004, no serogroup C cases occurred in any child under 15 years of age. In 2000, 123 cases occurred in this age group (Table 1). 
- Over the past three years (2002-2004) no child or adolescent has died from serogroup C disease.
- In 2000, 123 cases occurred in this age group (Table 1). 
- Overall, the number of serogroup C IMD cases has declined by 96% when compared to the time pre MenC vaccination (Fig. 3 and Table 1).
- In the few serogroup C cases that do occur, the most commonly identified serosubtype is 2a: P1.5, P1.2.

Incidence of non-B/non-C serogroups has not changed in recent years and their incidence remains low.
- The incidence of serogroup B disease has also declined, suggesting Ireland is emerging from the hyper-endemic period experienced in the late 1990s.
- Serogroup B disease is by far the predominant serogroup in Ireland, accounting for 95% of confirmed cases in 2004 (Fig. 4).
- Uptake/coverage of the MenC vaccine at 24 months was 88% in 2004.
- The epidemiology of non-B/non-C serogroups has not changed, incidence of these serogroups remains low.

Table 1. Comparison of number of serogroup C cases by age group in 2000 and 2004

<table>
<thead>
<tr>
<th>Age group (Years)</th>
<th>1999</th>
<th>2000</th>
<th>% Reduction</th>
</tr>
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<tbody>
<tr>
<td>&lt;1</td>
<td>100</td>
<td>120</td>
<td>100</td>
</tr>
<tr>
<td>1-4</td>
<td>96</td>
<td>140</td>
<td>100</td>
</tr>
<tr>
<td>5-9</td>
<td>8</td>
<td>14</td>
<td>83</td>
</tr>
<tr>
<td>10-14</td>
<td>15</td>
<td>31</td>
<td>52</td>
</tr>
<tr>
<td>15-19</td>
<td>0</td>
<td>8</td>
<td>100</td>
</tr>
<tr>
<td>20-24</td>
<td>8</td>
<td>15</td>
<td>57</td>
</tr>
<tr>
<td>&gt;25</td>
<td>3</td>
<td>6</td>
<td>80</td>
</tr>
<tr>
<td>Total</td>
<td>195</td>
<td>32</td>
<td>85</td>
</tr>
</tbody>
</table>

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Further Information
For further information on the epidemiology of meningococcal disease in Ireland, please contact:
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References
European Monitoring Group on Meningococci
EMGM Conference – Dublin
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Conclusions
- The incidence of invasive meningococcal disease has been steadily declining since 1999.
- The introduction of the MenC conjugate vaccine in Ireland in October 2000 has had a major impact in this decline.
- Uptake/coverage of the MenC vaccine at 24 months was 88% in 2004.
- Mortality and mortality due to meningococcal disease have substantially declined.
- The epidemiology of non-B/non-C serogroups has not changed, incidence of these serogroups remains low.
- The incidence of serogroup B disease has also declined, suggesting Ireland is emerging from the hyper-endemic period experienced in the late 1990s.
- Serogroup B disease now accounts for 95% of the IMD cases in Ireland, with highest incidence rates in infants and young children.
- In 2004, 45% of serogroup B cases occurred in children 5 years of age, while all (100%) of the serogroup B deaths (7) occurred in this age group.
- Despite a decline in the incidence of serogroup B disease, the burden of illness due to this serogroup is still substantial in Ireland.
- The development and availability of a suitable and effective MenB vaccine targeting a broad spectrum of serosubtypes would be very much welcomed.