1.3 Meningococcal Disease

Summary

Number of cases, 2008: 168
Number of cases, 2007: 179
Number of cases, 2006: 209
Crude incidence rate, 2008: 4.0/100,000

In 2008, 168 cases (4.0/100,000) cases of invasive meningococcal disease (IMD) were notified in Ireland. This was a notable decrease from the previous two years when 179 cases (4.2/100,000) and 209 cases (4.9/100,000), were notified in 2006 and 2005, respectively (figure 1). When compared with rates reported in 1999 and 2000, incidence rates have substantially declined in recent years (figure 1).

Based on the meningococcal disease case definition, 157 of the 168 cases (93.5%) notified in 2008 were classified as definite, none as presumed and 11 (6.5%) as possible. The vast majority of the cases (93.5%; n=157/168) were laboratory confirmed. Most cases were confirmed by PCR alone (53.5%, 84/157). Confirmation of the remaining 73 cases was by culture only (n=11), by PCR and/or culture (n=66). None were confirmed by serology or microscopy exclusively.

In 2008, male cases (n=100) exceeded female cases (n=68), resulting in a male to female ratio of 1.22:1.0. Cases ranged in age from two weeks to 91 years (median age of two years). The incidence of IMD was highest in infants and young children. Age specific incidence rate (ASIR) was highest among infants <1 year of age (68.8/100,000), followed by children in the 1-4 year age group (24/100,000), and the 15-19 year age group (5.9/100,000) (table 1).

In 2008 the overall incidence of IMD in Ireland was highest in the HSE-NE area (6.1/100,000) followed by the HSE-SE area (5.9/100,000) (table 2).

Neisseria meningitidis serogroup B was the pathogen most commonly associated with IMD in 2008 and accounted for 149 (89%) of the 168 notifications (figure 1). Since 2003 serogroup B has accounted for 80% or more of annual IMD notifications (figure 1).

IMD due to serogroup C has remained at very low levels over the last six years with no more than five

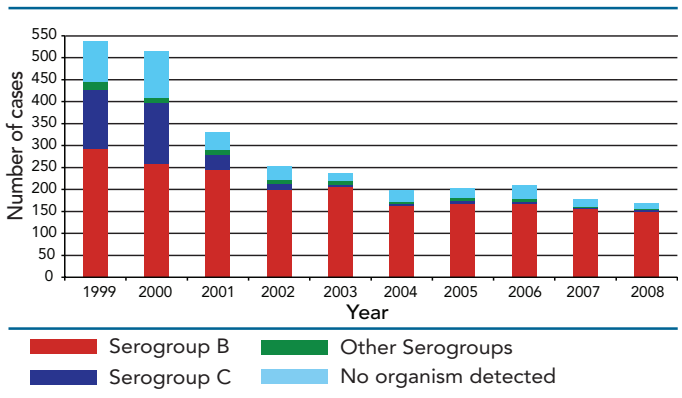

Figure 1. Number of invasive meningococcal disease (IMD) notifications in Ireland by serogroup, 1999-2008

cases occurring annually. In 2008, four (0.09/100,000) serogroup C cases arose (figure 1). All four cases occurred in adults (age range 17-46 years), one of whom was vaccinated and another who died. One MenC vaccine failure also occurred in 2007, 2006 and again in 2005, while no failures arising in either 2004 or 2003.

These recent low incidence rates highlight the huge impact the introduction of the MenC conjugate vaccine in October 2000 has had in almost eliminating IMD due to serogroup C (figure 1). Prior to the introduction of this vaccine, the serogroup C incidence rate in 1999 was 3.7 per 100,000 total population.

There were eight IMD related notified deaths in 2008 (case fatality ratio of 4.8%) compared to an average of six deaths between 2005 and 2007. The case fatality ratio (CFR) was highest amongst cases 25+ years of age (17.6%) as a result of three deaths from 17 cases (table 1). The next highest CFR occurred in children aged 5-9 years (8.3%) and adults aged 20-24 years or more (7.7%) (table 1).

Six of the eight deaths in 2008 were due to serogroup B disease (age range 15 months to 64 years) and one death each was caused by serogroup C (in an unvaccinated adult aged >25 years) and by serogroup W135 (in a child aged between 5-9 years).
In marked contrast to the 11 deaths reported in 2000 due to serogroup C disease (out of a total of 139 cases), only one such death (an adult aged > 25 years) was reported in 2008 (out of a total of four cases). This was the first death from this disease since 2004. One death from serogroup C disease occurred in 2003 and in 2004, both in adults over 55 year of age. In 2001 three deaths from serogroup C disease were reported, one in a child <15 years of age and two in adults aged between 20 and 64 years. Since 2001, the decline in the annual number of serogroup C deaths has been quite significant, especially in those aged under 25 years of age with no deaths being reported during this period of time. (table 3).

Despite a reduction in the overall incidence in recent years, IMD continues to be treated as a serious public health concern due to its associated severity, high mortality rate and serious adverse sequelae.

Table 1. Number of cases, deaths, age-group specific incidence rates and case fatality ratios of IMD in Ireland, 2008

Age Group	No. Cases	ASIR	No. Deaths	CFR (%)
<1	42	68.8	0	0%
1-4	58	24.0	3	5.2%
5-9	12	4.2	1	8.3%
10-14	9	3.3	0	0%
15-19	17	5.9	0	0%
20-24	13	3.8	1	7.7%
25+	17	0.6	3	17.6%
All ages	168	4.0	8	4.8%

ASIR, age specific incidence rate per 100,000 population
CFR, case fatality ratio

Effective vaccination is necessary for the complete prevention and control of IMD. Although effective vaccines are available against serogroups A, C, W135 and Y forms of the disease, a suitable vaccine against serogroup B disease, the most common form of IMD in Ireland, is not yet available. Until such time that an effective MenB vaccine, suitable for use in infants, is on the market, IMD will remain a significant cause of morbidity and mortality in children and young adults in Ireland.

The figures presented in this summary are based on data extracted from the Computerised Infectious Disease Reporting (CIDR) system on 16th July 2009.

These figures may differ from those published previously due to ongoing updating of notification data on CIDR.

Table 2. Number of cases and age specific incidence rates per 100,000 population of IMD by HSE area, 2008

HSE area	<1	1-4	5-9	10-14	15-19	20-24	25+	Total
E	23.4	12.1	2.1	3.4	6.1	4.3	0.9	2.7
M	132.1	31.7	0.0	0.0	11.4	5.5	0.0	5.2
MW	19.6	44.8	0.0	4.2	3.9	0.0	0.0	3.3
NE	110.1	27.6	6.7	11.1	3.7	7.1	0.8	6.1
NW	59.4	21.9	0.0	0.0	5.8	0.0	0.7	3.0
SE	133.5	33.3	12.2	0.0	6.2	3.1	0.7	5.9
S	104.9	35.4	9.6	2.5	7.1	2.1	0.7	5.3
W	69.5	13.2	0.0	3.7	3.4	6.2	0.0	2.7
Ireland	**68.8**	**24.0**	**4.2**	**3.3**	**5.9**	**3.8**	**0.6**	**4.0**

Table 3. Number of cases, deaths and case fatality ratios by year of meningococcal serogroups B and C disease in Ireland, 1999-2008

	Meningococcal B			Meningococcal C		
Year	No. Cases	No. Deaths	CFR%	No. Cases	No. Deaths	CFR%
1999	292	12	4.1%	135	5	3.7%
2000	258	13	5.0%	139	11	7.9%
2001	245	8	3.3%	35	3	8.6%
2002	199	8	4.0%	14	0	0%
2003	206	11	5.3%	5	1	20%
2004	163	7	4.3%	5	1	20%
2005	169	5	3.0%	5	0	0%
2006	168	5	3.0%	4	0	0%
2007	157	6	3.8%	2	0	0%
2008	149	6	4.0%	4	1	25%