1.3 Meningococcal Disease

Summary

Number of cases, 2012: 66
Number of cases, 2011: 94
Number of cases, 2010: 114
Crude incidence rate, 2012:1.4/100,000

In 2012, 66 cases (1.4/100,000) cases of invasive meningococcal disease (IMD) were notified in Ireland. This continues a downward trend observed over the past decade since 1999, when the rate was 14.8/100,000 population, a decline in cases of more than 87%.

Since 1st January 2012, a revised version of the case definition of meningococcal disease has come into effect and is detailed in the HPSC Case Definitions for Notifiable Diseases booklet on the HSPC website (www.hpsc.ie). Based on the current meningococcal disease case definition, 60 of the 66 cases (90.9%) notified in 2012 were case classified as confirmed, none (0%) as probable and six (9.1%) as possible. Laboratory confirmation of cases has improved with time. In 2012, 90.9% (n=60/66) of cases were laboratory confirmed in comparison to 78.7% (n=422/536) in 1999.

Typically, most cases are diagnosed by blood/CSF culture testing, blood/CSF PCR testing or detection of Gram negative diplococci in skin lesions/culture or in CSF specimens. Isolation of the organism from non-sterile sites (such as the eye, nose or throat) in clinically compatible cases is considered a possible case.

In 2012, 33 of the 60 confirmed cases (55.0%) were laboratory tested by PCR testing alone and another seven confirmed cases (11.6%) were diagnosed by culture of sterile specimens alone. Among the remaining 20 confirmed cases, 19 (31.7%) were diagnosed by both culture and PCR testing of sterile specimens and four (6.7%) by CSF microscopy.

Of all the 66 cases in 2012, none had a positive skin, nose or eye culture test result or a positive serology test result, but there was one positive result each of a skin microscopy test and a throat culture test.

In 2012, male cases (n=37) exceeded female cases (n=29), resulting in a male to female ratio of 1.3:1.0.

Cases ranged in age from three months to 88 years (median age of 2.2 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 (24.9/100,000; n=18), followed by children in the 1-4 year (7.8/100,000; n=22), and 15-19 year age groups (2.5/100,000; n=7) (table 1).

In 2012 the overall incidence of IMD in Ireland was highest in the HSE-SE area (2.4/100,000) with the lowest in the HSE-S area (0.9/100,000) (table 2). There were no imported cases in 2012.

Table 1. Number of cases, deaths, age-group specific incidence rates per 1000,000 population (calculated using Census 2011 data) and case fatality ratios of IMD in Ireland, 2012

Age Group	No. Cases	ASIR	No. Deaths	%CFR
<1	18	24.9	0	0.0%
1-4	22	7.8	0	0.0%
5-9	5	1.6	0	0.0%
10-14	2	0.7	1	50.0%
15-19	7	2.5	0	0.0%
20-24	1	0.3	0	0.0%
25+	11	0.4	1	9.1%
All ages	**66**	**1.4**	**2**	**3.0%**

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

Neisseria meningitidis serogroup B was the pathogen most commonly associated with IMD in 2012 and accounted for 58 of the 66 (87.9%) notifications (figure 1). Since 2003 serogroup B has accounted for more than 80% of annual IMD notifications (figure 1).

IMD due to serogroup C has remained at very low levels over the last decade with five cases or less occurring annually. In 2012 no MenC cases were notified (figure 1). There have been no true vaccine failures since 2009 when three failures were reported. Between 2005 and 2008, one true vaccine failure was reported in each year. The absence of MenC vaccine failures in the past three years is a measure of the positive impact with which the MenC conjugate vaccine continues to have since first introduced in October 2000. Prior to the introduction of this vaccine, the serogroup C incidence rate in 1999 was 3.7 per 100,000 total population. The National Immunisation Advisory Committee (NIAC) since September 2011 has recommended a booster dose of the MenC vaccine for close contacts of cases that have completed a course more than one year before, details of which are available at http://www.ndsc.ie/hpsc/A-Z/VaccinePreventable/Vaccination/Guidance/

There were two IMD related notified deaths in 2012 (case fatality ratio (%CFR) of 3.0%), the same number as in 2011. This compares to an annual average of 6.2 deaths between 2005 and 2010. In 2012, the %CFR was highest amongst cases 10-14 years of age (50.0%) as a result of one death among two cases (table 1). The next highest %CFR at 9.1% (n=1/11) in adults aged 25+ years (table 1).

One of the IMD deaths in 2012 was due to serogroup B disease (age 10-14 years); the other due to a serogroup Y infection (age 85+ years). This is in marked contrast to the 13 deaths due to serogroup B out of all 25 deaths reported in 2000. In the same year, 11 deaths were due to serogroup C disease. The decline in deaths associated with meningococcal disease since 2000 has been significant, partly due to the decrease in MenC as a result of the vaccination programme and also partly due to decline in meningococcal B disease (table 3).

Despite a marked decline in the overall incidence over the past decade, IMD is still an important public health concern due to its associated severity, high mortality rate and serious adverse sequelae.

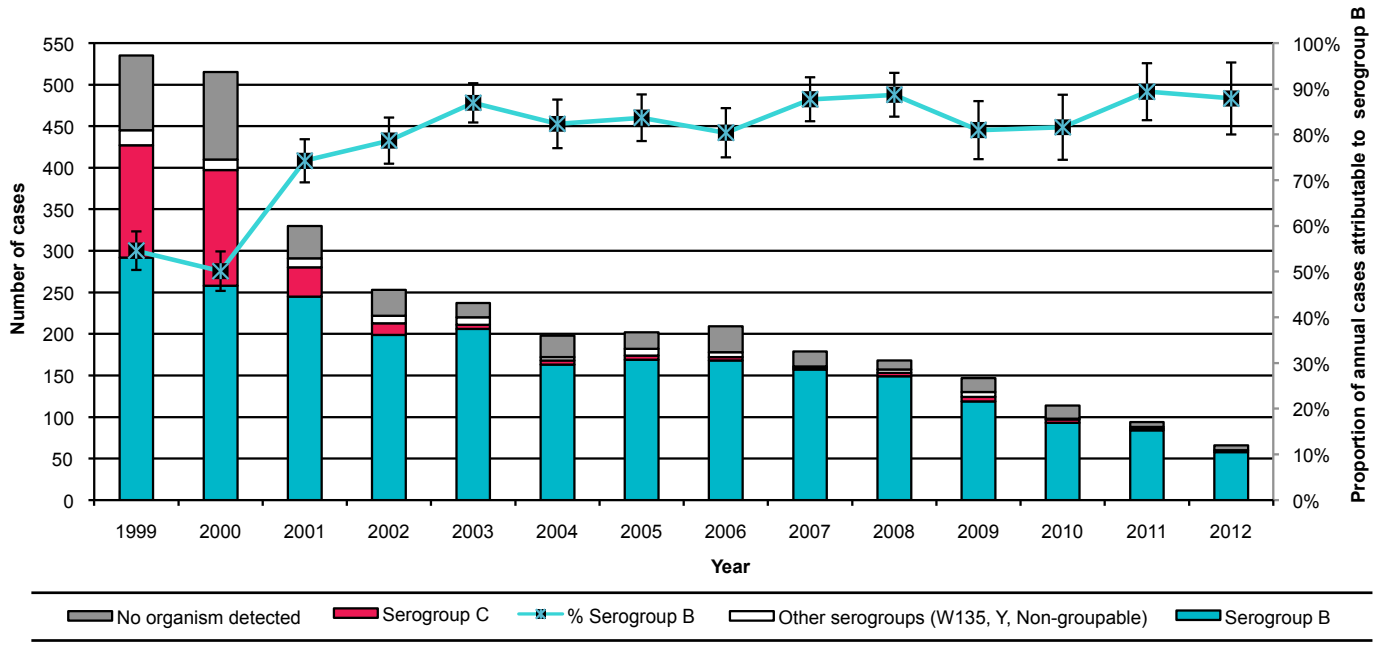

Figure 1. Number of invasive meningococcal disease (IMD) notifications in Ireland by serogroup and proportion of cases attributable to serogroup B with 95% confidence intervals, 1999-2012

Table 2. Age specific incidence rates per 100,000 population (calculated using Census 2011 data) of IMD by HSE area and age group, 2012

HSE Area	<1	1-4	5-9	10-14	15-19	20-24	25+	Total
E	26.9	6.1	0.9	0.0	3.1	0.0	0.1	1.1
M	41.5	5.2	0.0	0.0	0.0	6.0	0.0	1.4
MW	52.6	13.2	3.8	0.0	0.0	0.0	0.4	2.1
NE	26.0	9.6	2.9	0.0	3.7	0.0	0.7	2.0
NW	25.7	0.0	0.0	0.0	0.0	0.0	0.6	0.8
SE	39.2	12.9	2.8	2.9	0.0	0.0	0.9	2.4
S	0.0	7.5	0.0	2.3	2.5	0.0	0.2	0.9
W	0.0	7.6	3.2	0.0	7.2	0.0	0.7	1.6
Ireland	**24.9**	**7.8**	**1.6**	**0.7**	**2.5**	**0.3**	**0.4**	**1.4**

Effective vaccination is necessary for the complete prevention and control of IMD. Effective vaccines are available against serogroups A, C, W135 and Y forms of the disease. In 2012, a vaccine against serogroup B disease was recommended for approval by the European Medicines Agency. Marketing authorisation for the vaccine was granted in January 2013 for both child and adult administration. The decision regarding introducing this vaccine into the national immunisation programme is under consideration (at the time of writing) by the National Immunisation Advisory Committee.

The figures presented in this summary are based on data extracted from the Computerised Infectious Disease Reporting (CIDR) system on 29th July, 2013. These figures may differ from those published previously due to ongoing updating of notification data on CIDR.

Table 3. Number of cases, deaths and case fatality ratios (%CFR) by year of meningococcal serogroups B and C disease in Ireland, 1999-2012

	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	0.0%
2003	206	11	5.3%	5	1	20.0%
2004	163	7	4.3%	5	1	20.0%
2005	169	5	3.0%	5	0	0.0%
2006	168	5	3.0%	4	0	0.0%
2007	157	6	3.8%	2	0	0.0%
2008	149	6	4.0%	4	1	25.0%
2009	119	6	5.0%	5	0	0.0%
2010	93	4	4.3%	4	0	0.0%
2011	84	2	2.4%	2	0	0.0%
2012	58	1	1.7%	0	0	0.0%

% CFR, case fatality ratio

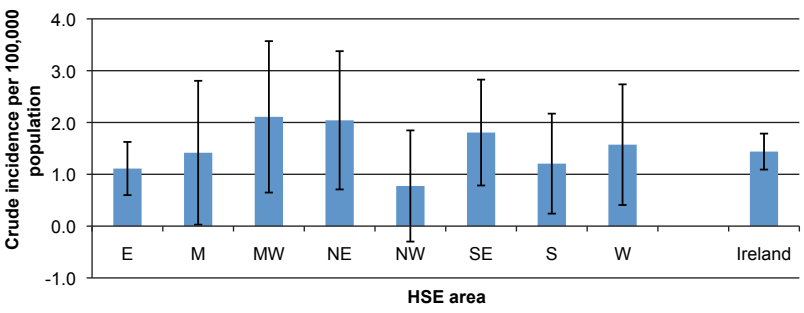

Figure 2. Crude incidence rates per 100,000 population with 95% confidence intervals for IMD notifications by HSE area, 2012