

## Quarterly Update on Invasive Meningococcal Disease and Other forms of Bacterial Meningitis Notifications

The Health Protection Surveillance Centre in Collaboration with the  
Irish Meningococcal and Meningitis Reference Laboratory

Quarter 2 – 2006                      Provisional Figures  
4<sup>th</sup> October 2006

### Summary

Fifty-five cases of meningococcal disease were notified in Q2-2006. This compares to an average of 47.3 cases in the same quarter for the years 2003, 2004 and 2005. There was one meningococcal disease related death in Q2-2006. There was also one death from meningococcal disease in Q2 of each of the previous three years.

### Introduction

An enhanced surveillance system for Bacterial Meningitis (including meningococcal septicaemia) commenced in Ireland in 1997. On the 1<sup>st</sup> January 2004 the Infectious Disease (Amendment) (No.3) Regulations 2003 (SI No. 707 of 2003) were implemented in Ireland and under these amendments invasive meningococcal disease was made a notifiable disease in its own right. Prior to this, it had been notifiable since 1982 under the category bacterial meningitis (including meningococcal septicaemia), when the 1981 Infectious Disease Regulations came into force.

Cases are notified daily to HPSC since 1999 and all these notifications have been transferred to the Computerised Infectious Disease Reporting (CIDR) system. HSE regions that are currently 'live' on CIDR enter meningococcal disease notifications directly to the system. For the two remaining HSE regions not yet using the system (HSE-MW and HSE-W), notifications reported in Q2-2006 were faxed to HPSC using the enhanced surveillance form and inputted to CIDR from there. The meningococcal disease notifications on CIDR were reconciled monthly with the Irish Meningococcal and Meningitis Reference Laboratory (IMMRL) database and throughout the year with the Departments of Public Health records. For surveillance purposes cases of invasive meningococcal disease are classified as 'definite', 'presumed' and 'possible' cases depending on the laboratory results and clinical presentation. (See case definitions booklet, <http://www.hpsc.ie/NotifiableDiseases/CaseDefinitions/>).

National data on meningococcal disease notifications for Q2-2006 are presented in this report. Figures presented in this report are based on data extracted from the CIDR system on 4<sup>th</sup> October 2006. **These data are provisional.**

### Results

#### *Meningococcal disease cases*

In Q2-2006, 55 cases of meningococcal disease were notified: – 40 serogroup B, 1 serogroup C, 1 serogroup W135, 1 serogroup Y, 1 serogroup was not specified and for 11 no organism was detected (Table 1). No cases were imported in this quarter. The average number of overall cases in the previous three years was 47.3 but the number of cases in Q2-2005 was slightly higher with 57 cases recorded (Table 1). The average number of reported cases in the second quarters between 1999 and 2002 ( $400/4=100$ ) was twice as high as that reported in the second quarters between 2003 and 2006 ( $197/4=49.3$ ).

**Table 1.** Quarter 2 Meningococcal Disease Notifications, 1999 to 2006

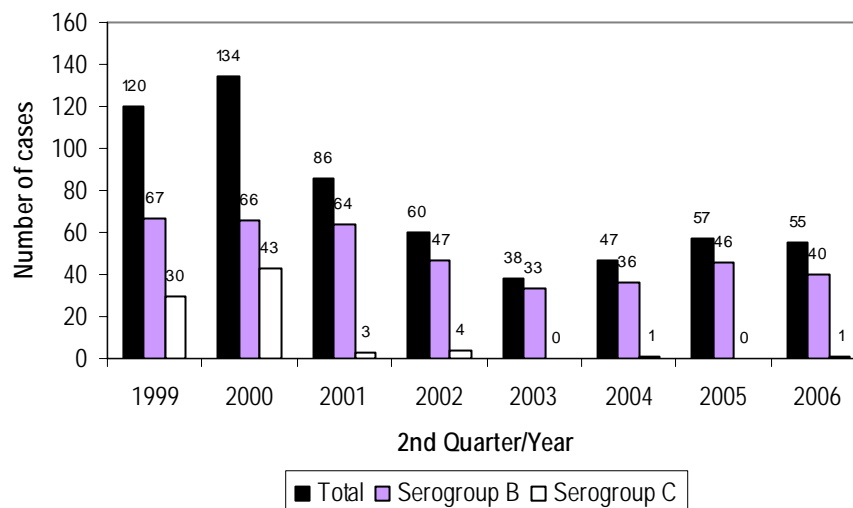
Serogroup	Q2-1999	Q2-2000	Q2-2001	Q2-2002	Q2-2003	Q2-2004	Q2-2005	Q2-2006
Group B	67	66	64	47	33	36	46	40
Group C	30	43	3	4	0	1	0	1
Group W135	0	0	1	2	0	0	2	1
Group Y	1	1	0	1	0	1	2	1
Non-groupable	3	1	1	0	1	0	0	0
Serogroup Not Specified	0	0	0	0	0	0	0	1
No Organism	19	23	17	6	4	9	7	11
<b>Total</b>	<b>120</b>	<b>134</b>	<b>86</b>	<b>60</b>	<b>38</b>	<b>47</b>	<b>57</b>	<b>55</b>

Of the 55 meningococcal disease notifications in Q2-2006, the breakdown by case classification was as follows: 41 definite cases, three presumed cases, eight possible cases and three where case classification was not specified (Table 2). The numbers of meningococcal disease notifications in Q2-2006 by serogroup and case classification are presented in Table 2.

**Table 2.** Classification of Meningococcal Disease Notifications, Q2-2006

Serogroup	Definite	Presumed	Possible	Not Specified	Total
Group B	37	2	1	0	40
Group C	1	0	0	0	1
Group W135	1	0	0	0	1
Group Y	1	0	0	0	1
Non-groupable	0	0	0	0	0
Serogroup Not Specified	1	0	0	0	1
No Organism	0	1	7	3	11
<b>Total</b>	<b>41</b>	<b>3</b>	<b>8</b>	<b>3</b>	<b>55</b>

In October 2000 the Department of Health and Children introduced a National Immunisation Programme against serogroup C meningococcal disease. The decline in the number of meningococcal serogroup C notifications is evident from Figure 1 in each of the second quarters between 1999 and 2006. There was only one meningococcal serogroup C case reported in Q2-2006, compared to 43 cases in the same quarter in 2000. During these same quarters the overall numbers of meningococcal notifications reported also fell sharply from a peak of 134 cases in Q2-2000 to 55 cases in Q2-2006 (Figure 1).

**Fig. 1.** Total number of meningococcal cases and number of serogroup B and C meningococcal disease cases notified in Ireland in the second quarter of each year between 1999-2006 (including four imported cases)

### *Incidence rates of Meningococcal disease*

A breakdown by HSE area per 100,000 population for serogroups B and C meningococcal disease, for the second quarters of each year between 1999 and 2006 are presented in Tables 3 and 4, respectively. Incidence rates were calculated using census 1996 denominators for 1999 data and census 2002 denominators for 2000 to 2006 data.

There were four imported cases of invasive meningococcal disease (IMD) reported in the second quarters of each year between 1999 and 2006: three serogroup B and one serogroup Y. Of the four imported cases reported, one was in HSE-ER in 2001; one (a serogroup Y case) in the HSE-M in 2004 and two were reported in the HSE-W in 1999 and 2001.

Excluding the four imported cases, the highest second quarterly incidence rate for total meningococcal disease since 1999 occurred in Q2-2000 (3.4/100,000) and the lowest was in Q2-2003 (1.0/100,000).

For serogroup B meningococcal disease, the incidence rate in Q2-2006 ranged from 3.1/100,000 in HSE-M to 0.2/100,000 in HSE-SE (Table 3). The highest second quarterly incidence rate for serogroup B meningococcal disease occurred in 2005 (4.0/100,000) in HSE-M (Table 3).

The introduction of a National Immunisation Programme against serogroup C meningococcal disease in October 2000 has substantially reduced the serogroup C incidence rate from 1.1/100,000 in Q2-2000 to nil in Q2-2003 and again in Q2-2005 (Table 4).

**Table. 3.** Rates per 100,000 population of meningococcal disease serogroup B by HSE Area in the second quarter of each year between 1999-2006 (excluding three imported serogroup B cases)

Qr/Yr	HSE-ER	HSE-M	HSE-MW	HSE-NE	HSE-NW	HSE-SE	HSE-S	HSE-W	Total
Q2-1999	2.62	1.46	0.95	1.63	1.42	1.28	1.83	0.85	1.82
Q2-2000	2.93	3.11	1.47	1.16	1.35	0.71	0.17	0.53	1.68
Q2-2001	1.78	0.89	2.06	0.58	2.26	1.89	1.38	1.31	1.58
Q2-2002	1.50	2.22	1.18	1.16	0.45	0.71	1.03	0.79	1.20
Q2-2003	0.57	0.89	2.06	1.45	1.81	0.94	0.52	0.00	0.84
Q2-2004	0.71	1.77	0.88	0.58	0.45	1.42	1.38	0.53	0.92
Q2-2005	0.64	3.99	1.47	0.58	0.45	0.94	2.07	1.05	1.17
Q2-2006	0.93	3.11	2.06	1.16	1.35	0.24	0.52	0.53	1.02

**Table. 4.** Rates per 100,000 population of meningococcal disease serogroup C by HSE Area in the second quarter of each year between 1999-2006

Qr/Yr	HSE-ER	HSE-M	HSE-MW	HSE-NE	HSE-NW	HSE-SE	HSE-S	HSE-W	Total
Q2-1999	0.69	1.46	0.63	0.98	0.47	2.04	0.73	0.00	0.83
Q2-2000	0.86	0.89	0.59	0.58	0.00	1.65	2.41	1.05	1.10
Q2-2001	0.14	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.08
Q2-2002	0.21	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.10
Q2-2003	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q2-2004	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03
Q2-2005	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Q2-2006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	0.03

In Q2-2006, the number of meningococcal cases reported by age was highest among children under 5 years (n=34), followed by the 5-14 and 15-24 age groups with 10 and 5 cases respectively and 6 other cases reported in the over 25 year old group.

The highest second quarterly age specific incidence rates for serogroup B meningococcal disease in Q2-2006, was in the <1 years age group (14.7/100,000) but this was substantially less than that which was recorded for the same age group in Q2-1999 when the rate peaked at 43.0/100,000 (Table 5). For the 1-4 years age group the age specific incidence rate was 8.1/100,000 in Q2-2006, the same as in Q2-2005 (Table 5). For the 5-9 years age group, the Q2-2006 age specific incidence rate was 2.3/100,000, the highest recorded rate since Q2-2002 (Table 5).

For serogroup C meningococcal disease the highest second quarterly age specific incidence rate recorded between 1999 and 2006 was in the <1 year old age group (20.5/100,00) in Q2-1999 (Table 5). The one and only serogroup C case in Q2-2006 occurred in the 1-4 years age group. This child had received all three doses of the meningococcal C conjugate vaccine as an infant and therefore is being classified as a MenC vaccine failure. This is the only MenC vaccine failure to date in 2006.

**Table 5.** Age specific incidence rates per 100,000 population of meningococcal disease serogroup B and C in the second quarter of each year between 1999-2006 (excluding three imported serogroup B cases)

	AgeGrp (yrs)	Q2-1999	Q2-2000	Q2-2001	Q2-2002	Q2-2003	Q2-2004	Q2-2005	Q2-2006
Serogroup B	<1	42.99	18.35	34.86	18.35	12.84	18.35	18.35	14.68
	1-4	8.93	15.24	8.96	7.17	6.27	7.62	8.07	8.07
	5-9	3.89	3.41	1.89	3.79	1.51	1.14	1.51	2.27
	10-14	2.45	1.05	1.05	2.10	0.70	0.70	1.05	0.70
	15-19	1.18	1.92	2.55	0.96	0.64	0.96	1.60	0.64
	20-24	1.36	0.61	2.13	0.30	0.00	0.30	0.61	0.30
	25+	0.05	0.08	0.08	0.04	0.16	0.00	0.16	0.12
Serogroup C	<1	20.47	11.01	0.00	1.83	0.00	0.00	0.00	0.00
	1-4	5.95	4.03	0.45	0.90	0.00	0.00	0.00	0.45
	5-9	0.35	1.89	0.00	0.00	0.00	0.00	0.00	0.00
	10-14	0.31	3.15	0.35	0.00	0.00	0.00	0.00	0.00
	15-19	1.47	3.83	0.00	0.00	0.00	0.00	0.00	0.00
	20-24	0.34	0.61	0.00	0.00	0.00	0.00	0.00	0.00
	25+	0.00	0.00	0.04	0.04	0.00	0.04	0.00	0.00

### *Meningococcal disease deaths*

One meningococcal disease death was notified in Q2-2006. The death was classified as a definite meningococcal serogroup B case and it occurred in a child <1 year of age. Overall, the case fatality ratio (CFR) due to meningococcal disease was 1.8% (1 death / 55 cases) (Table 6).

The year in which the lowest overall Q2 CFR was recorded was 1999 with a value of 0.8% (1 death / 120 cases). The highest overall Q2 CFR was recorded in Q2-2000 with a value of 5.2% (7 deaths / 134 cases). In Q2-2006 the CFR was highest in the <1-year-old group, at 11.1% (1 death / 9 cases). The next highest CFR in the same age group was recorded in Q2-2003 with a value of 10.0% (1 death / 10 cases) and together these results represent the highest CFRs for this age group between 1999 and 2006 (Table 6).

**Table 6.** Number of deaths from meningococcal disease by age group (years) in the second quarter of each year between 1999-2006

Qr/Yr	<1	1-4	5-9	10-14	15-19	20-24	25+	Total Deaths	Total Cases	Case Fatality Ratio (CFR)
Q2-1999	1	0	0	0	0	0	0	1	120	0.83%
Q2-2000	2	1	0	1	3	0	0	7	134	5.22%
Q2-2001	2	0	0	0	0	0	0	2	86	2.33%
Q2-2002	1	2	0	0	0	0	0	3	60	5.00%
Q2-2003	1	0	0	0	0	0	0	1	38	2.63%
Q2-2004	1	0	0	0	0	0	0	1	47	2.13%
Q2-2005	1	0	0	0	0	0	0	1	57	1.75%
Q2-2006	1	0	0	0	0	0	0	1	55	1.82%
Total	10	3	0	1	3	0	0	17	597	2.85%

### **Update on other forms of Bacterial Meningitis Q2-2006**

Since the introduction of the Infectious Disease (Amendment) (No. 3) Regulations (S.I. No. 707 of 2003) in January 2004, forms of bacterial meningitis, including meningococcal disease, that would have previously been notified as Bacterial Meningitis (including meningococcal septicaemia) are now notifiable under the specific disease/causative pathogen such as meningococcal disease, *Haemophilus influenzae* (invasive), *Streptococcus pneumoniae* infection (invasive), listeriosis etc. Forms of bacterial meningitis due to a pathogen not listed as a notifiable infectious disease, or where the pathogen is unknown, are now notified as Bacterial meningitis (not otherwise specified).

This section of the report focuses on bacterial meningitis cases notified in Q2-2006 other than meningococcal disease.

#### ***Haemophilus influenzae* disease (invasive)**

In the second three months of 2006, a total of 12 cases of invasive *Haemophilus influenzae* were reported in Ireland, none of which were associated with meningitis. In Q2-2005 two of the seven *H. influenzae* cases notified had a clinical diagnosis of meningitis. Both were due to *H. influenzae* type b (Hib) and both had been vaccinated and therefore, were regarded as Hib vaccine failures. For further information on invasive *H. Influenzae* notifications in Q2-2006 please refer to the relevant report at <http://www.hpsc.ie/A-Z/VaccinePreventable/Haemophilusinfluenzae/Publications>

#### ***Streptococcus pneumoniae* infection (invasive)**

In the second quarter of 2006, five cases of invasive *Streptococcus pneumoniae* infection causing meningitis were notified. Three of these cases occurred in HSE-ER, one each in the HSE-S and HSE-W. A total of 76 cases of invasive *Streptococcus pneumoniae* infection was reported in Q2-2006, and apart from the five cases causing meningitis, two caused septicaemia (excluding one case that had both meningitis and septicaemia), another two caused pneumonia, one caused peritonitis and the clinical diagnoses on the remaining 66 cases were not available. One of the five pneumococcal meningitis cases died, this was in an elderly patient. The remaining four cases were between 3 months and 21 years of age, inclusive. Over the same time period in 2005, three cases of pneumococcal meningitis were notified and no deaths were reported. The pneumococcal vaccination status was only reported for two meningitis cases in Q2-2006, one was described as 'unvaccinated', the other 'incomplete'.

#### **Tuberculosis meningitis**

There were three cases of TB meningitis reported in Q2 2006, one each from HSE-ER, HSE-S and HSE-W. One case was less than 5 years of age and the other two were between 5 and 9 years. BCG vaccination status was not reported.

#### **Bacterial meningitis (not otherwise specified)**

In the second quarter of 2006 ten cases of bacterial meningitis, due to pathogens not otherwise specified under the Infectious Disease (Amendment) (No. 3) Regulations (S.I. No. 707 of 2003), were notified. There were no deaths reported. In three cases the causative pathogen was identified and all involved one-month old infants: streptococcus group B (n=2) and *Staphylococcus aureus* (n=1). There were seven other bacterial meningitis cases of unknown aetiology (age range from 2 months to 38 years).

**The HPSC would like to thank all those who provided data for this report: the Departments of Public Health, microbiology laboratories, the Irish Meningococcal and Meningitis Reference laboratory and clinicians.**