

INVASIVE MENINGOCOCCAL DISEASE AND OTHER FORMS OF BACTERIAL MENINGITIS IN IRELAND

A REPORT BY THE HEALTH PROTECTION SURVEILLANCE CENTRE IN COLLABORATION WITH THE
IRISH MENINGOCOCCAL AND MENINGITIS REFERENCE LABORATORY



Quarter 4, 2007

Provisional Figures

6th March 2008

Summary

Q4-2007

Thirty-seven cases of invasive meningococcal disease (IMD) were notified in Q4-2007. This compares to an average of 43 cases in the same quarter for the years 2004, 2005 and 2006. There was one IMD related death reported in Q4-2007. The last previously reported Q4 IMD death occurred in 2004.

Q1-Q4, 2007

In 2007, the incidence of IMD declined by 14.3% compared to 2006 with 179 and 209 IMD cases, being notified, respectively. There were seven IMD related deaths in 2007, while there were five in 2006.

Introduction

Meningococcal disease became a notifiable disease on the 1st January 2004 with the implementation of the Infectious Disease (Amendment) (No. 3) Regulations 2003 (SI No. 707 of 2003). Prior to this, it was notifiable under the category bacterial meningitis (including meningococcal septicaemia). Most forms of bacterial meningitis are now notifiable under the specific disease pathogen name as listed in the legislation. For bacterial meningitis pathogens not listed, these forms of meningitis are notifiable under the disease termed "bacterial meningitis (not otherwise specified)". The case definitions used are described in the NDSC Case Definitions for Notifiable Diseases booklet.

An enhanced surveillance system is in place for invasive meningococcal disease and other forms of bacterial meningitis. Details of this surveillance system are described in the Epidemiology of Meningococcal Disease 2006 report (www.hpsc.ie).

Data on invasive meningococcal disease notifications and bacterial meningitis notifications for Q4-2007 and 2007 are presented in this report. The figures presented in this report are based on data extracted from the CIDR system on 6th March 2008. **These figures are provisional.** Incidence rates were calculated using 2006 Census of Population as denominator data.

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Results

Meningococcal Disease Cases

In Q4-2007, 37 cases of invasive meningococcal disease (IMD) were notified: 35 serogroup B and one each of serogroup C and W135 was detected. There were no imported cases reported in Q4-2007. Of the 37 cases notified in Q4-2007, all were classified as definite (Table 1; Figure 1).

Table 1. Classification of IMD cases notified in Q4-2007

Classification	Invasive Meningococcal Disease				Total IMD
	Group B	Group C	Group W135	Other	
				Grps*/No Organism Detected	
Definite	35	1	1	0	37
Presumed	0	0	0	0	0
Possible	0	0	0	0	0
Not specified	0	0	0	0	0
Total	35	1	1	0	37

*including non-groupable and not typed

Over the four quarters of 2007, 179 cases of IMD were reported; this includes 157 serogroup B cases, two each of serogroup C and W135. Eighteen cases where no organism was detected were also notified. Over the same period in 2006, there were 209 IMD notifications with serogroup B cases accounting for the majority.

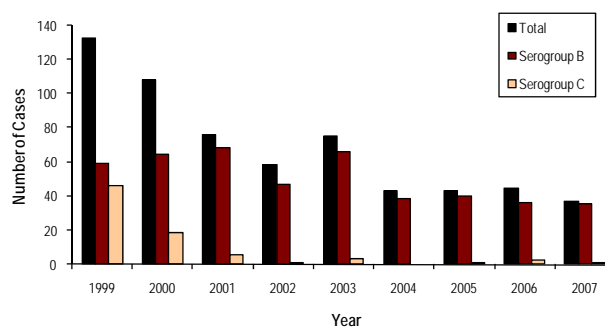


Figure 1. Number of invasive meningococcal disease cases notified in Ireland in the fourth quarters of 1999-2007

IMD Cases by HSE Area and Age

Serogroup B disease accounted for 94.6% (n=35/37) of the IMD notifications in Q4-2007. In 2007, serogroup B disease accounted for 87.7% (n=157/179) of the IMD notifications (Appendix 1).

The quarterly incidence rate for IMD in Q4-2007 ranged from 0.0/100,000 population in HSE-NW to 2.0/100,000 in HSE-M. In 2007 the incidence rate ranged from 3.5/100,000 population in HSE-S to 5.5/100,000 in HSE-NW (Appendix 2).

In Q4-2007 the incidence rate of IMD cases reported by age was highest amongst infants <1 year of age (n=6; 9.8/100,000) followed by children age 1-4 years (n=11; 4.6/100,000). In the 5-14 and 15-24 year age groups, nine (1.6 /100,000) and six (1.0/100,000) cases, respectively, were reported. In addition, there were five cases (0.2/100,000) reported in the 25-years and older age group (Appendix 3).

In 2007, the IMD incidence rate reported by age was highest amongst infants <1 year of age (n=48; 78.6/100,000) followed by children aged 1-4 years (n=58; 24.0/100,000). In the 5-14 and 15-24 year age groups, 27 (4.8/100,000) and 25 (4.0/100,000) cases, respectively, were reported. There were 21 cases (0.8 /100,000) reported in those aged 25-years or older (Appendix 3).

IMD Deaths

One IMD related death was notified in an elderly patient in Q4-2007. The last previously reported Q4 IMD death occurred in 2004. The one IMD related death in Q4-2007 was due to serogroup B and corresponds to an overall case fatality ratio (CFR) of 2.7 % (1 death/37 cases) (Appendix 2).

In 2007, seven IMD related deaths occurred, six of which were due to serogroup B and one where no organism was detected. An overall CFR of 3.9% (7 deaths/179 cases) was reported (Appendix 2). Using serogroup B cases alone as the denominator, the CFR was 3.8% (6 deaths/157 cases). There were five deaths and 168 cases arising from serogroup B infection in 2006, corresponding to a CFR of 3%.

Other forms of Bacterial meningitis

Streptococcus pneumoniae meningitis

In the fourth quarter of 2007, eight cases of *Streptococcus pneumoniae* infection resulting in meningitis were notified. These cases occurred in five children ≤3 years of age, one of whom died, and in three adults (age range 30-50 years). Over the same period in 2005 and 2006, four and two cases, respectively, of pneumococcal meningitis were notified. One death was reported in the fourth quarter of 2006.

There were 71 reported cases of invasive *S. pneumoniae* infection in Q4-2007. Apart from the eight reported cases with meningitis (or meningitis/septicaemia), six had septicaemia only, another 15 had invasive pneumonia, one had a soft tissue infection (unspecified) and the clinical diagnoses of the remaining 41 cases were not reported.

There were 360 reported cases of invasive *S. pneumoniae* infection in 2007. Apart from the 34 reported cases with meningitis (or

meningitis/septicaemia), 25 had septicaemia only, 52 had invasive pneumonia, one had peritonitis, one had a musculoskeletal infection (unspecified), another had an unspecified soft tissue infection and the clinical diagnoses of the remaining 246 cases were not reported. There were five deaths reported among the 34 meningitis cases during 2007.

Haemophilus influenzae meningitis

Six cases of invasive *Haemophilus influenzae* was reported in Q4-2007, but none caused meningitis. In contrast, in Q4-2006, eight cases of invasive *Haemophilus influenzae* were reported, one of which caused meningitis. In total, thirty-one cases of invasive *Haemophilus influenzae* were reported in 2007, only two of which caused meningitis (a type b case in a 10-month infant and a non-typed case in a 36- year old man).

For further information on *H. influenzae* notifications, please refer to the reports available at <http://www.ndsc.ie/hpsc/A-Z/VaccinePreventable/Haemophilusinfluenzae/Publications>

Listeria meningitis

One case of *Listeria* meningitis was reported in Q1-2007 in a 69-year old female.

TB meningitis

One case of TB meningitis was reported in a 56- year old in Q4-2007 and seven in total during 2007 (age range 35 -87 years).

Streptococcus Group A meningitis

There were no invasive infections of *Streptococcus* Group A (*Streptococcus pyogenes*) causing meningitis reported in 2007.

Bacterial meningitis (not otherwise specified)

In the fourth quarter of 2007, ten cases of bacterial meningitis, due to pathogens not otherwise specified (nos) under the Infectious Disease (Amendment) (No. 3) Regulations (S.I. No. 707 of 2003), were notified. The causative pathogen, *Streptococcus agalactiae* (group B streptococcus) was identified in four of these ten cases. One case was attributable to *Proteus mirabilis*. The remaining five bacterial meningitis cases were of unknown aetiology (age range from 2 months to 66 years). One death in a 15-19 year old was reported, but the causative agent was not identified. Seven cases of bacterial meningitis (nos) cases notified in Q4-2006, the causative pathogen was identified in one - *Escherichia coli*.

In 2007, 33 cases of bacterial meningitis were reported, one of which was fatal. Nine of these 33 cases were caused by group B streptococcus, one by *Gemella* species, another by *Proteus mirabilis* and the remaining 22 were of unknown aetiology.

Viral meningitis

Fifteen cases of viral meningitis (age range 1 month to 59 years) were reported in Q4-2007. Six of these cases had their causative organism identified: two Herpes simplex virus and four enteroviruses (strain types not determined).

In 2007, 48 cases of viral meningitis were reported, one of which was fatal and of unknown aetiology.

Appendix 1

Meningococcal Disease Cases and Deaths by Serogroup and Quarter, between 1999 and 2007

Meningococcal Disease - Cases

Serogroup	Q4 1999	Q4 2000	Q4 2001	Q4 2002	Q4 2003	Q4 2004	Q4 2005	Q4 2006	Q4 2007	Q1-Q4 2006	Q1-Q4 2007
Serogroup B	59	64	68	47	66	38	40	36	35	168	157
Serogroup C	46	18	5	1	3	0	1	2	1	4	2
Serogroup W135	1	1	0	0	1	1	0	0	1	1	2
Serogroup Y	0	2	0	1	1	1	0	1	0	4	0
Non-groupable (NG)	3	3	0	1	2	1	0	0	0	1	0
No organism detected	23	20	3	8	2	2	2	5	0	31	18
Total	132	108	76	58	75	43	43	44	37	209	179

Meningococcal Disease - Deaths

Serogroup	Q4 1999	Q4 2000	Q4 2001	Q4 2002	Q4 2003	Q4 2004	Q4 2005	Q4 2006	Q4 2007	Q1-Q4 2006	Q1-Q4 2007
Serogroup B	4	1	2	2	3	1	0	0	1	5	6
Serogroup C	0	2	1	0	0	0	0	0	0	0	0
Serogroup W135	0	0	0	0	0	0	0	0	0	0	0
Serogroup Y	0	1	0	0	0	0	0	0	0	0	0
Non-groupable (NG)	0	0	0	0	0	0	0	0	0	0	0
No organism detected	0	0	0	0	0	0	0	0	0	0	1
Total	4	4	3	2	3	1	0	0	1	5	7

Appendix 2

Meningococcal Disease Cases and Deaths by HSE Area and Quarter, between 1999 and 2007

Meningococcal Disease – Cases

HSE Area	Q4 1999	Q4 2000	Q4 2001	Q4 2002	Q4 2003	Q4 2004	Q4 2005	Q4 2006	Q4 2007	Q4-2007 CIR*	Q1-Q4 2007	Q1-Q4-2007 CIR*
HSE-E	54	37	27	15	29	16	12	11	16	1.1	59	3.9
HSE-M	3	8	6	3	5	1	3	1	5	2.0	10	4.0
HSE-MW	13	5	7	12	6	4	3	7	4	1.1	18	5.0
HSE-NE	16	13	5	6	4	3	7	5	4	1.0	21	5.3
HSE-NW	5	5	6	3	2	6	3	3	0	0.0	13	5.5
HSE-SE	10	18	4	5	6	4	2	8	3	0.7	18	3.9
HSE-S	22	19	14	11	16	7	8	8	3	0.5	22	3.5
HSE-W	9	3	7	3	7	2	5	1	2	0.5	18	4.3
Total	132	108	76	58	75	43	43	44	37	0.9	179	4.2

* CIR, crude incidence rate per 100,000

Meningococcal Disease – Deaths

HSE Area	Q4 1999	Q4 2000	Q4 2001	Q4 2002	Q4 2003	Q4 2004	Q4 2005	Q4 2006	Q4 2007	Q4-2007 CFR (%)*	Q1-Q4 2007	Q1-Q4-2007 CFR (%)*
HSE-E	1	1	0	1	1	0	0	0	1	6.3%	2	3.4%
HSE-M	0	1	0	1	0	0	0	0	0	0.0%	0	0.0%
HSE-MW	0	0	0	0	0	0	0	0	0	0.0%	0	0.0%
HSE-NE	1	0	0	0	0	0	0	0	0	0.0%	2	9.5%
HSE-NW	1	1	1	0	0	1	0	0	0	0.0%	2	15.4%
HSE-SE	1	1	0	0	0	0	0	0	0	0.0%	0	0.0%
HSE-S	0	0	1	0	2	0	0	0	0	0.0%	0	0.0%
HSE-W	0	0	1	0	0	0	0	0	0	0.0%	1	5.6%
Total	4	4	3	2	3	1	0	0	1	2.7%	7	3.9%

* CFR, Case fatality ratio (%)

Appendix 3

Meningococcal Disease Cases and Deaths by Age Group and Quarter, between 1999 and 2007

Meningococcal Disease – Cases

AgeGrp (yrs)	Q4 1999	Q4 2000	Q4 2001	Q4 2002	Q4 2003	Q4 2004	Q4 2005	Q4 2006	Q4 2007	Q4-2007 CIR*	Q1-Q4 2007	Q1-Q4-2007 CIR*
<1	30	20	23	13	19	9	10	11	6	9.8	48	78.6
1-4	43	33	17	18	25	21	12	8	11	4.6	58	24.0
5-9	14	11	11	7	7	3	4	0	7	2.4	14	4.9
10-14	8	16	7	4	1	1	3	4	2	0.7	13	4.7
15-19	16	17	9	7	12	6	7	10	3	1.0	20	6.9
20-24	8	4	2	1	6	2	2	3	3	0.9	5	1.5
25+	12	7	7	8	5	1	4	8	5	0.2	21	0.8
Total**	131	108	76	58	75	43	42	44	37	0.9	179	4.2

* CIR, crude incidence rate per 100,000

** Table excludes events with unknown age from Q4-1999 and Q4-2005

Meningococcal Disease – Deaths

AgeGrp (yrs)	Q4 1999	Q4 2000	Q4 2001	Q4 2002	Q4 2003	Q4 2004	Q4 2005	Q4 2006	Q4 2007	Q4-2007 CIR*	Q1-Q4 2007	Q1-Q4-2007 CIR*
<1	0	0	1	1	2	0	0	0	0	0.00	1	1.6
1-4	3	0	1	1	0	1	0	0	0	0.00	4	1.7
5-9	0	0	0	0	0	0	0	0	0	0.00	0	0.0
10-14	0	1	0	0	1	0	0	0	0	0.00	0	0.0
15-19	0	1	0	0	0	0	0	0	0	0.00	1	0.3
20-24	0	1	1	0	0	0	0	0	0	0.00	0	0.0
25+	1	1	0	0	0	0	0	0	1	0.04	1	0.0
Total	4	4	3	2	3	1	0	0	1	0.02	7	0.2

* CIR, crude incidence rate per 100,000