Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

February 2005

hpsc EPI-Insight

Volume 6 Issue 2

Disease Surveillance Report of HPSC, Ireland

ISSN: 1393-9548

Contents

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Health Service Reform in Ireland

Major reform is taking place in the Irish health service. As of January 1, 2005 a new agency, the Health Service Executive (HSE), has assumed responsibility for the health service in Ireland. The ten health boards and the Eastern Regional Health Authority have been abolished and their functions have transferred to the HSE. There are four administrative regions in the country: the Western region with a head office in Galway city; the Southern region with a head office in Cork city; the Dublin/North East region with a head office in Kells, Co. Meath; and the Dublin/Mid-Leinster region with a head office in Tullamore, Co. Offaly.

There are nine directorates in the new system reporting to the Chief Executive Officer of the HSE. Communicable disease surveillance and control has come under the Directorate of Population Health. The former National Disease Surveillance Centre is now know as the Health Protection Surveillance Centre.

Cluster of Meningococcal Group B Infections in HSE North Eastern Area

Four children with confirmed group B meningococcal septicaemia were admitted to Our Lady of Lourdes Hospital, Drogheda between 2nd and 5th January 2005. One baby died shortly after admission. The others recovered following treatment in hospital. All of these patients were aged less than 18 months and all had the diagnosis confirmed by blood PCR. The families lived within an area of radius 20 kilometres in adjoining parts of counties Louth and Meath.

Families of these patients have been interviewed by public health doctors. Two patients were first cousins and had family contacts in common during the seven days prior to symptoms occurring. In addition to close household contacts, all these common family contacts have been offered antibiotic chemoprophylaxis.

In order to trace any other possible links between the cases, all families were asked details of possible common factors between any of the children e.g. play centres visited, babysitters, visitors, social events etc. No further links between cases were discovered.

The Irish Meningococcal and Meningitis Reference Laboratory has forwarded samples to the Meningococcal Reference Unit, Manchester for further investigatitons. The results are awaited.

Peter Finnegan, HSE North Eastern Area;
Karen Murphy, IMMRL.

Five Nations Health Protection Conference

The Five Nations Health Protection Conference will be held on Tuesday 10 and Wednesday 11 May 2005 in the Health Protection Agency Centre for Infections, Colindale, London. The themes of the conference include: bloodborne viruses; environmental health and non-communicable disease; new and emerging infections; outbreaks of communicable disease; infection control in the community; and joint working across the five nations.

For further details and registration forms please contact: Mrs Vivienne Fitch, Training Section, HPA/CDSC, 61 Colindale Avenue, London NW9 5EQ. Tel: 0044 20 8200 6868. Fax: 0044 20 8200 7868. Email Vivienne.fitch@hpa.org.uk. Closing date for receipt of applications is April 29, 2005.

Meningococcal Disease in Ireland, 2003/2004

Introduction

Invasive meningococcal disease including meningitis and septicaemia are systemic infections caused by the bacteria *Neisseria meningitidis*. Humans are the only known reservoir of *Neisseria meningitidis*. Serogroups A, B, C, Y and W135, are the five principle *N. meningitidis* pathogenic serogroups. Serogroups B and C are responsible for most cases of meningococcal disease in developed countries. Serogroup Y meningococcal disease occurs relatively infrequently in developed countries with the exception of the United States where it accounts for approximately one third of the cases.[1] In contrast, the majority of cases of meningococcal disease in Africa and Asia continue to be attributed to serogroup A, and more recently serogroup W135.

Meningococcal disease affects all age groups but is most common in infants and young children. The disease has a case fatality rate of approximately 10%, and approximately 10% of survivors can have serious sequelae such as amputations, hearing loss, seizures and mental retardation. Due to the seriousness of this disease, the relatively high rate of morbidity associated with it, and its occurrence in young children, the development of vaccines suitable for routine prevention is an ongoing major research focus.

In the late 1990s, Ireland had one of the highest rates of meningococcal disease in Europe, peaking in 1999 with 14.7 cases per 100,000 total population. Since then the incidence has been steadily declining each year with just 6.0 cases per 100,000 in 2003.[2] The decline can largely be attributed to the impact of the meningococcal serogroup C conjugate (MenC) vaccine programme. This conjugate vaccine was introduced in October 2000 for all children and individuals under 23 years of age and has been extremely successful in reducing the incidence of serogroup C disease from 3.5 cases per 100,000 in 2000 to 0.1 case per 100,000 in 2003, a reduction of 96%.[2] Serogroup B is now responsible for the majority of cases of meningococcal disease in this country.

Materials and Methods

An enhanced surveillance system for bacterial meningitis (including meningococcal septicaemia) commenced in Ireland in 1997. A standard form for collecting patient demographic details, microbiological and epidemiological information is used. The form is completed by a medical officer for each suspected case of bacterial meningitis notified and is sent to each Director of Public Health and to the Health Protection Surveillance Centre (HPSC) formerly known as the National Disease Surveillance Centre. An MS Access database containing records on all bacterial meningitis (including meningococcal septicaemia) cases notified nationally since 1999 is maintained at HPSC. Records on this database are reconciled on an ongoing basis with the Irish Meningococcal and Meningitis Reference Laboratory database and with the Departments of Public Health databases.

The 2002 Census of Population was used as the denominator data for the calculation of incidence rates. The direct method of age standardisation was used to control for the confounding effect of age and thereby enable comparisons of incidence rates to be made between different health boards/geographical areas. The Irish population was used as the standard population.

The case definitions used for meningococcal disease were those recommended by the National Meningitis Working Group in 1999.[3] Cases are classified as 'definite', 'presumed' or 'possible'. These are defined in the NDSC Case Definitions for Notifiable Diseases booklet.[4]

For this article data were analysed using the epidemiological year July-June and data for the most recent year July 2003 – June 2004 are presented in detail.

Results

Meningococcal disease cases

During the epidemiological year July 2003 to June 2004 (2003/2004), 235 cases of meningococcal disease were notified in Ireland, an incidence rate of 6.0 per 100,000 total population. This is a slight increase from the previous year (2003/2004) when 224 cases were notified (5.7/100,000) (figure 1). Serogroup B *Neisseria meningitidis* accounted for 83% of the meningococcal disease notifications (n=196), nine cases were due to serogroup C, two serogroup Y, one serogroup W135, two non-groupable (NG) and 25 no organism detected (table 1). Eighty eight percent of the cases were classified as definite (n=207), 3% as presumed (n=6) and 9% as possible (n=22) (table 1).

Two hundred and eleven of the 235 cases were laboratory confirmed. The majority were confirmed by PCR (61%), while 36% were confirmed using blood and/or CSF culture, 1 % by serology, 1% by throat/eye swab and 1% by microscopy.

Three of the cases notified were classified as imported; i.e. acquired abroad. Two of these were classified as definite cases (one serogroup B, the other serogroup Y) and one possible case. Two cases were imported from England and one from Latvia. All imported cases occurred in individuals less than 20 years of age. The MWHB, SEHB and WHB notified one imported case each. These imported cases have been excluded in the calculation of health board and age-specific incidence rates in this article.

Table 1. Meningococcal disease notifications in 2003/2004 by serogroup and case classification

	Definite	Presumed	Possible	Total
Serogroup B	194	2	0	196
Serogroup C	9	0	0	9
Serogroup W135	1	0	0	1
Serogroup Y	2	0	0	2
Non-groupable (NG)	1	1	0	2
No organism	0	3	22	25
Total	207	6	22	235

Meningococcal disease by serogroup

Serogroup B was responsible for 196 cases (5.0/100,000) of meningococcal disease in 2003/2004. This was a slight increase from the previous year when 189 cases (4.8/100,000) were notified. Since the introduction of the MenC vaccine the proportion of cases due to serogroup B has increased from 50% (278/556 cases) in 1999/2000 to over 80% (196/235 cases) in 2003/2004. The proportion of cases attributable to serogroup C has declined from 30% (168/556 cases) in 1999/2000 to 3.8% (n = 9/235 cases) in 2003/2004. The proportion and number of cases due to other serogroups has fluctuated very little over that period (figure 2). Although the proportion of meningococcal cases associated with serogroup B has increased since mass immunisation with MenC vaccine, the actual numbers of cases have decreased (278 cases in 1999/2000 as opposed to 196 cases in 2003/2004), indicating that capsule switching from serogroup C to B has not occurred. Figure 2 also highlights the seasonal occurrence of meningococcal disease with the

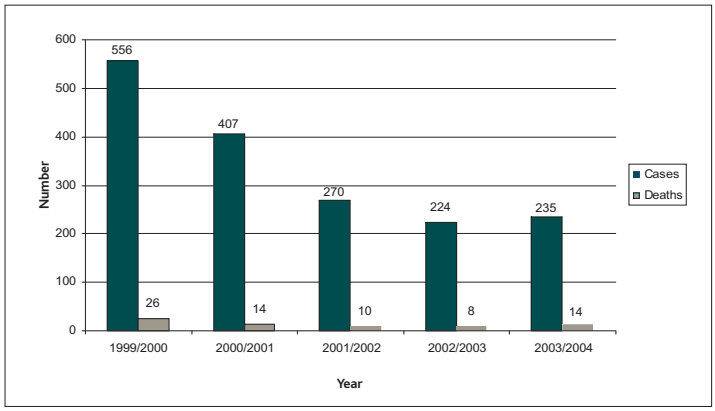

Figure 1. Number of invasive meningococcal disease cases and deaths in the epidemiological years 1999/2000 - 2003/2004

frequency of the disease peaking during the winter months (Quarter 4 and/or Quarter 1).

Meningococcal disease by age and sex
In 2003/2004 the male:female ratio was 1.06:1.0 for meningococcal disease. The age-specific incidence rate was highest, as always, in the <1 year olds (123/100,000) followed by the 1-4 year olds (34/100,000). A similar trend was observed for serogroup B disease. There were no serogroup C cases in children less than five years of age. Five cases occurred in individuals aged between 5-24 years of age. These were within the age group eligible for MenC vaccination. Three had not been vaccinated while the vaccination status is unknown for the other two cases. Four cases of serogroup C disease also occurred in older adults. None of these individuals would have received the MenC vaccine as part of the routine immunisation programme.

Meningococcal disease by health board
The national crude incidence rate of meningococcal disease was 6.0 per 100,000 total population. The incidence of the disease ranged from 4.21 per 100,000 in the WHB to 8.87 in the MHB (figure 3). However, these rates were not regarded as statistically different from the national rate since their 95% confidence intervals overlapped with the national rate.

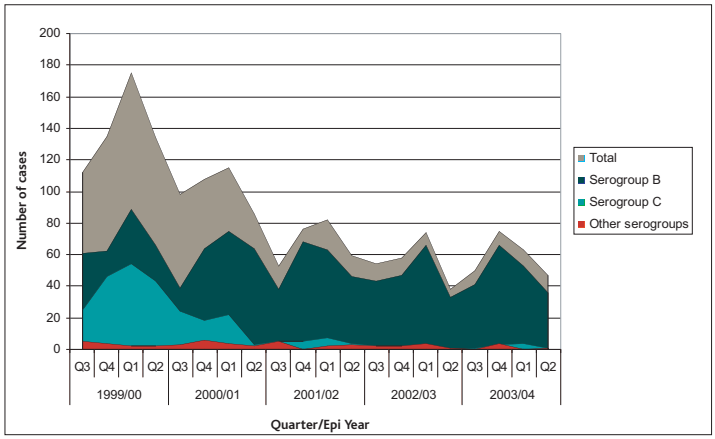

Figure 2. Quarterly number of meningococcal disease notifications by serogroup from 1999/2000 - 2003/2004

To control for the confounding effect of age, the direct age standardisation method was used. Following this adjustment, the SHB then had the highest age standardised incidence rate of meningococcal disease (8.8/100,000), followed by the MHB (8.3/100,000) while the WHB still had the lowest (4.3/100,000). However, as the 95% confidence intervals overlapped, these rates were not considered statistically different from the national rate.

Clusters of meningococcal disease
A cluster is defined as the occurrence of two or more cases of meningococcal disease during a period less than or equal to three months among persons in the same defined setting such as household, crèche, school/college or community. If cases are of a different serogroup these are not regarded as a cluster.

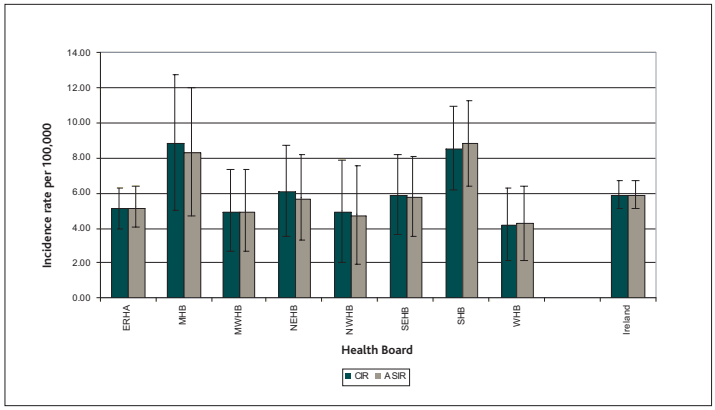

Figure 3. Crude incidence and age standardised incidence rates with 95% confidence intervals for meningococcal disease in 2003/2004 (July 2003 - June 2004)

The vast majority of meningococcal disease cases notified tend to be sporadic cases, with no known links to previous cases. However, in 2003/2004 two clusters were reported. Living in the same household was the setting for both clusters; each involving two siblings infected with serogroup B *N. meningitidis*, age range 2-16 years. In both situations the secondary case became ill within three days or less of the index case falling ill.

Meningococcal disease deaths
There were 14 meningococcal disease deaths in 2003/2004 compared to just 8 in 2002/2003, and 10 deaths in 2001/2002 (figure 1). The case fatality rate (CFR) in 2003/2004 was 5.6%. Twelve of the deaths were due to serogroup B meningococcal disease (CFR = 6.1%) and two due to serogroup C (CFR = 22%). Nine of the serogroup B deaths were in children less than five years of age; one was in a young teenager and two in adults. The two serogroup C deaths were both in middle aged adults.

Discussion

Since 2001/2002 the incidence rate for meningococcal disease has not exceeded 7.0/100,000 population (270 cases) over a 12-month period. This trend continued in 2003/2004 when the rate was 6.0/100,000 (235 cases). This contrasts with a time in the late 1990s when between five and six hundred cases occurred per annum and incidence rates were approaching 15/100,000. The main contributory reason for this fall in the incidence of meningococcal disease was the introduction of the MenC vaccine in Ireland in late 2000. Serogroup C disease had declined by over 95% within two to three years of introducing the vaccine. This vaccine has also had a major impact in reducing mortality attributable to serogroup C disease, especially in young people. Since the vaccine was introduced in October 2000, no child under 10 years of age has died from serogroup C invasive infections, whereas in 1999/2000 five children in this age group died. There were two serogroup C related deaths in 2003/2004. Both were middle-aged adults and therefore would not have received the MenC vaccine.

In the midst of this success, it is important not to lose sight of the fact that the burden of illness due to serogroup B disease is still significant, with 5.0 cases per 100,000 occurring in 2003/2004 and 108 cases per 100,000 cases occurring in the <1 year olds. Of the 12 serogroup B related deaths reported over this period, 75% (9/12) occurred in children less than five years of age. Despite the success in developing an effective MenC conjugate vaccine and the more recent advances with a tetravalent serogroup A/C/W/Y conjugate which is in late stage development, development of an equivalent MenB vaccine has proved problematic. Conventional methodologies of vaccine development have failed to identify a broadly immunogenic MenB vaccine. More novel approaches to vaccine development using the genome-based approach, known as reverse vaccinology are now being investigated.[5] Effective prevention and control of meningococcal disease can only be achieved with the use of vaccines that target all these disease-causing serogroups. Therefore, the challenge ahead is the prevention of serogroup B meningococcal disease and the aspiration that vaccine intervention in the future will prevent all meningococcal disease.

M Fitzgerald, S Cotter, HPSC; M Cafferkey, K Murphy, IMMRL

Acknowledgements
We wish to thank the Departments of Public Health and Community Care Areas for providing data for this report. Thanks also to the microbiology laboratories and the Irish Meningococcal and Meningitis Reference Laboratory involved in the laboratory confirmation and surveillance of meningococcal disease.

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Increased Influenza Activity in Ireland

During week one 2005 (week ending January 9th), influenza activity in Ireland showed a marked increase from previous weeks.[1] However, this was followed by a rapid decline in week 2 (week ending January 16th). Data on influenza-like illness (ILI) around the country are provided by a network of 35 sentinel general practices, comprising 64 general practitioners (GPs) and covering 2.7% of the population. ILI is defined as the sudden onset of symptoms with a temperature of 38°C or more, and two or more of the following: headache, sore throat, dry cough and myalgia.

The ILI consultation rate of 87.3 cases per 100,000 population during week one marked a peak in the rate for this season to date (figure 1). This rate had been increasing in the previous four weeks.[2] However, the ILI consultation rate reported in week two was 33.4 cases per 100,000, a considerable decrease on the week one rate.

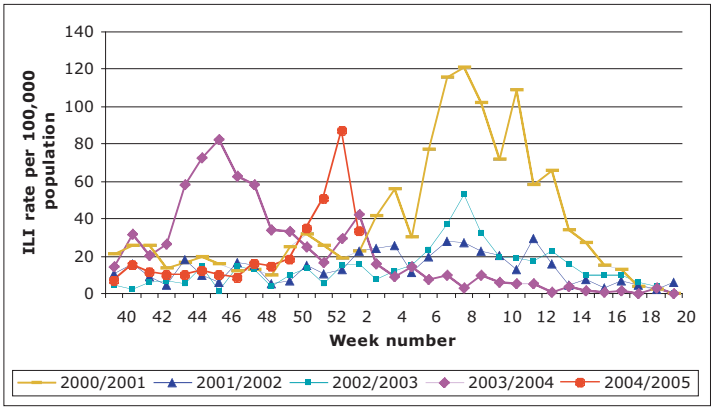

Figure 1. GP consultation rate for ILI per 100,000 population by week, during the 2000/2001, 2001/2002, 2002/2003, 2003/2004 & 2004/2005[a]-influenza seasons.

Age Group

The 15-64 year age group had the highest ILI rate[b] during week one, with 108.1 cases per 100,000 compared to the lowest rate of 16.1 cases per 100,000 in the 5-14 year age group. ILI rates among children aged less than 5 years (31.8 cases per 100,000) and adults aged over 64 years (30.4 cases per 100,000) were much lower than the rate among the 15-64 year age group.

Laboratory Findings

The National Virus Reference Laboratory (NVRL) receives specimens for influenza and respiratory syncytial virus (RSV) testing from sentinel GPs and from hospitals (non-sentinel). During week one, 38.2% of specimens received were from sentinel sites. In week two, 19.7% of specimens received were from sentinel sites. More specimens were received during week one than week two (102 and 76 specimens respectively), coinciding with the increase in ILI consultation rates reported by the sentinel GP sites. A greater proportion of specimens tested positive for influenza in week one than in week two (20.6% and 14.5% respectively) (table 1). The majority of the 23 isolates which have been subtyped since the beginning of the 2004/2005 influenza season have been influenza A (H1N1). The first cases of influenza B in Ireland this season were detected in weeks one and two (a single case each week).

Two specimens have been antigenically characterised to date this season. One influenza A (H1N1) isolate has been characterised as A/New Caledonia/20/99-like. The current season's vaccine contains an A/New Caledonia/20/99(H1N1)-like virus and should provide good protection against the strain. One influenza A (H3N2) isolate was found to be closest in antigenic character to the reference viruses A/Shantou/1219/04 and A/Oslo/807/04. The current vaccine will offer protection against these strains.

Table 1. Total number of specimens tested for influenza and positive results by type and subtype for weeks one and two of 2005 and the 2004/2005 season to date

Week number	Total specimens	Influenza positive specimens	% Influenza positive	Influenza A (unsubtyped)	Influenza A (H3N2)	Influenza A (H1N1)	Influenza B
1	102	21	20.6	20	0	0	1
2	76	11	14.5	10	0	0	1
Total	1009	108	10.7	83	2	21	2

Outbreaks

There have been two influenza outbreaks reported to the Health Protection Surveillance Centre (HPSC) this season. The first outbreak occurred in a school in which 32 pupils were reported ill in late November 2004 and influenza A (unsubtyped) was isolated from two cases. There were no hospitalisations. HPSC also received notification in week 3 2005 of an outbreak of influenza A (unsubtyped) in a long-stay facility for the elderly.

Deaths

So far, two deaths due to influenza have been registered in January. One was in a person aged over 64 years and the second death occurred in a child in the 5 to 14 year age group with a chronic underlying medical condition who died in early December 2004.

Vaccination

Annual influenza vaccination is recommended for a number of at-risk children and adults, including all persons aged 65 years or older. Vaccination is free for all those entitled to free primary care which includes all persons aged 70 years or older and approximately 50% of the 65-69 year age group. The average vaccine uptake in these patients aged 65 years and over during the 2003-2004 season was 62.2%.[3] Uptake rates for the 2004-2005 influenza season are as yet unavailable.

European Activity

Ireland reported medium levels of influenza intensity for week one to the European Influenza Surveillance System (EISS), as did Spain, England and Northern Ireland.[4] All other networks reported low activity. Geographically there was local influenza activity in Ireland and also in Belgium and Italy. Spain reported widespread influenza activity while England, France and Switzerland all reported regional activity during week one.

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Acknowledgements

Special thanks are due to the sentinel GPs, the NVRL, the Departments of Public Health and sentinel schools and hospitals who provide data throughout the influenza season. Also thanks to Dr. Alan Hay and his team at NIMR, Mill Hill, U.K. who carried out the antigenic characterisation of the influenza isolates.

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[a] Please note that for comparison with previous years, data for week 52 2004 on this graph represent the average of weeks 52/04 and 53/04

[b] It must be noted that the denominator used in the age-specific consultation rate is from the 2002 census data. The age-specific rates therefore assume that the age distribution from the sentinel general practices is similar to the national age distribution.