Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

May 2006

hpsc EPI-Insight

Volume 7 Issue 5

Disease Surveillance Report of HPSC, Ireland

ISSN: 1393-9548

Contents

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Mid-term evaluation of Hib booster catch-up campaign 2005-2006

Introduction

A rapid decline in the incidence of disease associated with *Haemophilus influenzae* type b (Hib) followed on from the introduction of Hib vaccine in 1992. An increase in Hib vaccine failures was identified in Q4 2004 and continued into 2005[1]. In 2005, a Hib booster catch-up campaign was undertaken for children between one and four years of age. A National Hib Working Group, convened to implement and monitor the programme, conducted this mid-term evaluation.

Methodology

116 randomly selected GP practices were surveyed in Jan/Feb 2006 to determine Hib vaccine uptake for children aged 1-2 years (phase 1 cohort), based on both GP estimates and HSE reports, and to identify factors associated with uptake.

Results

The response rate from GP practices was 92%. The GPs estimated a mean uptake of 62%, which was higher than the mean HSE reported uptake (50%) for these practices. However, HSE data were only available in four HSE areas (Figure 1).

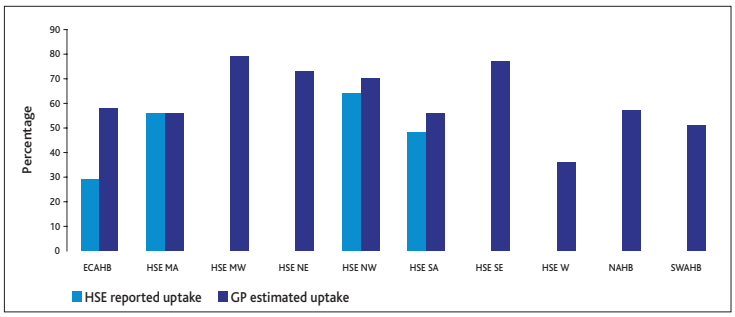

Figure1. HSE reported and GP estimated Hib vaccine uptake by HSE area

The majority of practices were satisfied with the Hib campaign in terms of: accuracy of cohort list (98%), HSE communications (94%), quantity of vaccine supplied (92%), and vaccine delivery system (97%).

Thirty-five percent of practices contacted parents directly (in addition to HSE letter), and reported significantly higher Hib vaccine uptake (>70%) than those that did not (Odds ratio 3.42 [95% CI 1.38-8.59], p value < 0.01). Defaulters were followed up by 43% of practices.

Discussion

To date in 2006, there have been six paediatric Hib cases, three of whom were fully vaccinated (three doses of Hib vaccine). The continued incidence of Hib in children highlights the need for the Hib booster catch-up campaign and the need to achieve high levels of immunisation.

Hib booster uptake in the phase 1 cohort is a disappointing 62%. Such low levels are unlikely to achieve herd immunity. This low uptake does not appear to be related to problems with vaccine supply, delivery, or communications. Most GPs expressed high levels of satisfaction with these programme activities. Of note, personal communication between GP practice staff and parents was related to higher vaccine uptake. This highlights the important role that GP practice staff plays in both communicating to parents and highlighting the importance of immunisation to them.

Administrative data are useful for monitoring the immunisation uptake. Where this information was available, the HSE reported substantially lower rates than those provided by the GPs. This difference may reflect delays in GP returns or delays in inputting these data into the local IT systems.

Key points

Estimates of Hib booster vaccine uptake for phase 1 cohort children are low (62%). Unless higher levels are achieved additional Hib cases in young children are likely to occour. Additional efforts are needed to encourage parents to bring their children for vaccination.

This survey demonstrates the key role that GP practices have in achieving high levels of Hib uptake. Practices that made contact with parents reported higher levels of Hib uptake than those that did not.

Timely submission of immunisation returns will assist HSE in evaluating the Hib vaccine uptake.

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Acknowledgements
The Hib working group wish to thank the HSE staff and the GPs/practice nurses/staff who facilitated this survey. Without them this mid-term evaluation would not have been possible.

Reference on request

Epidemiology of Meningococcal Disease in Ireland

Introduction

Neisseria meningitidis is the causative agent of invasive meningococcal disease, which is responsible for considerable morbidity and mortality throughout the world. Five serogroups of *N. meningitidis* - A, B, C, Y, and W135 are responsible for the majority of meningococcal disease worldwide.[1]

Significant variations exist in the geographical distribution of these serogroups. In developed countries serogroups B and C are responsible for the majority of invasive meningococcal disease. Most cases of disease in Africa and Asia can be attributed to serogroup A and more recently W135. While serogroup Y accounts for up to a third of the cases in the United States, it occurs relatively infrequently in most other developed countries.[2]

During the late 1990s, Ireland had one of the highest rates of invasive meningococcal disease in Europe (>14 cases per 100,000 total population per annum with over 80% laboratory confirmed). Group C accounted for approximately one third of the cases. Infants and children under 5 years of age and young adults were mostly affected.

In October 2000, Ireland became the second country in the world to introduce the meningococcal serogroup C conjugate (MenC) vaccine to the routine infant immunisation schedule. The UK had done so a year previously. Infants are given the MenC vaccine at 2, 4 and 6 months. A catch-up campaign offering the vaccine to all those under 23 years of age also commenced in October 2000, with children over 12 months receiving a single dose of the vaccine. Since then there has been a very impressive drop in the incidence of invasive meningococcal disease due to *N. meningitidis* serogroup C. Mortality due to this serogroup has also declined.

In this report the epidemiology of invasive meningococcal disease is described and the changes that have occurred in the epidemiology of this disease since the introduction of the MenC vaccine are presented.

Materials and Methods

On the 1st 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.[3] 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.

An enhanced surveillance system for bacterial meningitis, which also includes meningococcal septicaemia, has been in operation in Ireland since 1997. Cases are notified daily to HPSC since 1999 and all these notifications have been transferred to the Computerised Infectious Disease Reporting (CIDR) system. During 2005 the regions "live" on CIDR entered meningococcal disease notifications directly to the system. For the regions not yet using the system, notifications were faxed to HPSC and inputted to CIDR from there. The meningococcal disease notifications on CIDR are 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.[4]

Data analysis for this report was performed using both Business Objects Reporting™ in CIDR and MS Excel. Incidence rates were calculated using Census of Population data as the denominator. The 1996 Census was used in the analysis of the 1999 data, while 2002 Census was used in analysing data from 2000-2005.

The figures presented in this report are based on data from CIDR as of 6th April 2006.

Results

Cases of invasive meningococcal disease

The annual incidence rates of invasive meningococcal disease have more than halved in recent years, from 14.8 per 100,000 total population in 1999 to 5.2 per 100,000 total population in 2004 and 2005 (Figure 1). In 2005, 205 cases were notified. These cases were classified as follows: 180 definite, 5 presumed and 20 possible. Ninety percent of the cases (184/205) in 2005 were laboratory confirmed (180 PCR and/or culture, 4 microscopy).

Serogroup C

The incidence of serogroup C disease has declined from a high of 3.7 per 100,000 in 1999 to 0.1 per 100,000 in 2003, 2004 and 2005. These recent figures represent a decline of 96% overall for this serogroup (Figure 2). In 2005, just five cases of invasive meningococcal disease due to *N. meningitidis* serogroup C (4 definite and 1 presumed) were notified. Three occurred in children under 10 years of age and two in adults. When compared with 2000, there was a more than 90% reduction in serogroup C disease in all children under 9 years (Table 1). There was a 100% reduction in those aged children aged 10 to 19 years and a decrease of 88% in the adult population (Table 1).

In total since the MenC vaccine was introduced five years ago, there have been four true vaccine failures, one each in 2000, 2001, 2002 and 2005. All these arose in children 1-4 years of age and the four children survived. A true vaccine failure is defined as the occurrence of serogroup C disease in an individual despite being fully vaccinated against the disease.

Serogroup B

Although the incidence of serogroup B disease has also declined in recent years, reducing from 8.1 per 100,000 in 1999 to 4.1 per 100,000 in 2004, it is now by far the predominant serogroup in Ireland (Figure 1). Serogroup B accounted for 93% (168/180) of the definite cases of invasive meningococcal disease in 2005. The majority of these serogroup B cases (68%) occurred in children under 5 years of age. Therefore, the age specific incidence rate is highest in infants less than 1 year (81/100,000), followed by children in the 1-4 year age group (31/100,000).

Non-B/C serogroups

The incidence of the non-B/C serogroups has not changed in recent years and remains low in Ireland. In 2005, there were three cases of

Table 1. Number of cases of serogroup C meningococcal disease by age group notified in 2005 versus 2000

Age group (Years)	2000	2005	% Reduction
<1	20	1	95
1-4	37	1	97
5-9	15	1	93
10-14	20	0	100
15-19	31	0	100
20-24	8	1	88
>25	8	1	88
Total	**139**	**5**	**96**

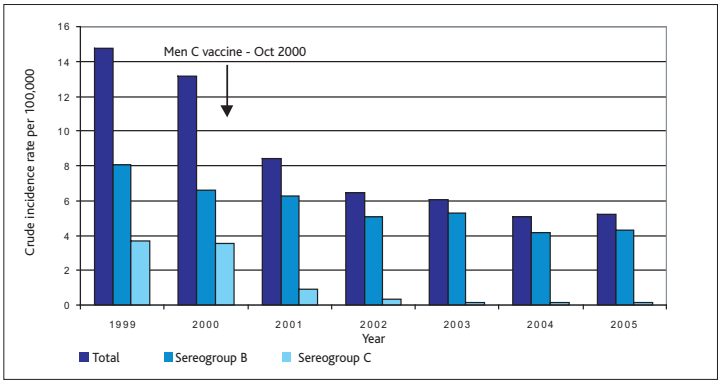

Figure 1. Annual crude incidence rates of invasive meningococcal disease in Ireland, 1999-2005

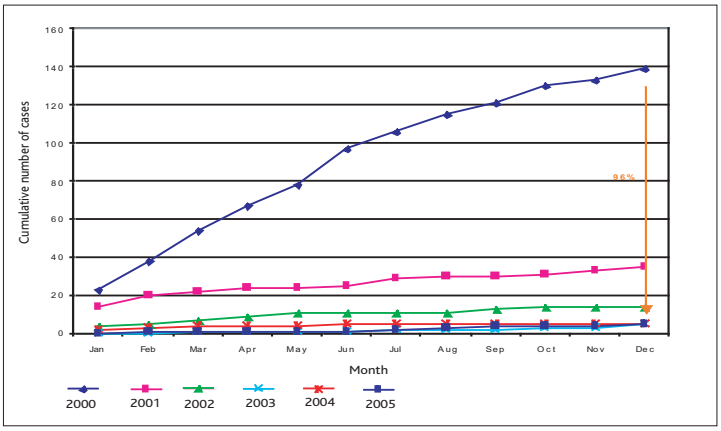

Figure 2. Cumulative number of serogroup C cases, 2000-2005

serogroup W135, (2 in children under 5 years and 1 in an adult) and three cases of serogroup Y (1 in a child under 1 year and 2 in adults). None of the non-B/C serogroups that occurred in 2005, were reported as having been imported

Deaths due to invasive meningococcal disease

The number of deaths associated with invasive meningococcal disease has also decreased. In 1999 and 2000, 17 and 25 deaths occurred, respectively, whereas in 2004 and 2005 there were ten and six meningococcal disease related deaths, respectively (Figure 3).

Annual case fatality ratios (CFRs) ranged from 3%-5% between 1999 and 2005 (Figure 3). CFRs tend to be higher in the older age groups. Between 1999 and 2005 the average meningococcal disease CFR in adults was 7%-8%.

There have been no serogroup C related deaths over the past four years (2002-2005) in any child, adolescent or young adult whereas in 2000 there were 11 such deaths in those less than 25 years of age. There was one serogroup C death in 2003 and 2005, both occurred in adults. No serogroup C related deaths occurred in either 2002 or 2004.

Discussion

The introduction of the MenC conjugate vaccine in October 2000 played a major role in the decline in the incidence of invasive meningococcal disease in Ireland in recent years. Serogroup C accounts for just 3% of invasive meningococcal infections compared to 30% in 1999. Mortality due to serogroup C disease has also declined. There have been no serogroup C deaths in those less than 25 years of age over the past four years, 2002-2005. In contrast 11 serogroup C related deaths occurred in 2000. In the five years since the MenC vaccine was introduced there have been four true vaccine failures, which on average is less than one per year. No one particular vaccine was associated with these failures and none of the children in

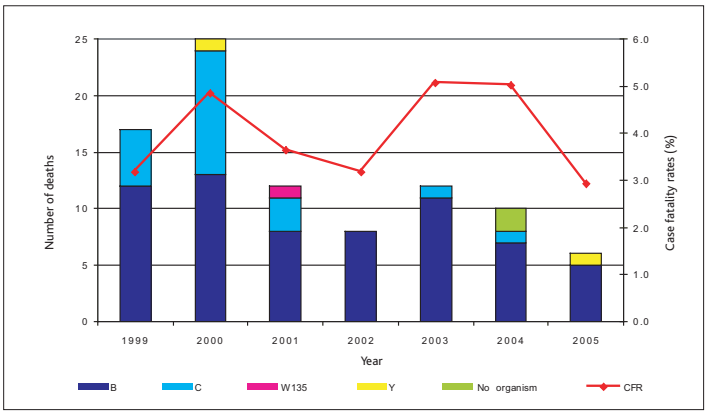

Figure 3. Number of invasive meningococcal disease deaths by serogroup and the annual case fatality ratio (CFR, %) for the disease
Note: No deaths occurred due to non-groupable N. meningitidis.
No organism indicates, N. meningitidis was not detected/isolated in a specimen, but clinical evidence of meningococcal disease.

whom these failures occurred was reported as being immunocompromised.

The epidemiology of the non-B/non-C serogroups has not changed recently and their incidence continues to remain low. Serogroup B is now the predominant serogroup occurring in Ireland, accounting for over 90% of meningococcal disease notifications in 2005. The incidence of serogroup B disease has also been on the decline over the last five/six years, suggesting that Ireland has been emerging from the hyper-endemic period experienced in the late 1990s. However, the decline in serogroup B disease has not been of the magnitude seen with serogroup C disease. Furthermore, despite the drop in the incidence of serogroup B disease, the burden of invasive infection due to this serogroup is still substantial, with infants and children most affected. This highlights the importance of parents and guardians being ever vigilant to the signs and symptoms of this invasive disease.

Although predominantly a disease of childhood and adolescents, the disease can also occur in adults. In 2005, 30 cases occurred in adults 20 years of age or older, with one death occurring. This highlights the importance of being aware of the symptoms of this disease regardless of the age at presentation. Overall the case fatality ratio (CFR) has remained stable over the last seven years, ranging between 3% and 5%. It tended to be higher in adults at times. Rapid recognition of the disease and immediate access to treatment are important in improving the outcome from this disease.

At present there is no suitable vaccine available to combat serogroup B invasive meningococcal disease. The development of a universally safe, immunogenic and effective serogroup B *Neisseria meningitidis* vaccine has remained a challenge. In a recent review by Perrett and Pollard the indications are that the future prevention of serogroup B disease will rely on both outer membrane vesicle vaccines being used for serosubtype-specific outbreaks and new vaccines containing multiple other antigens.[5] Continued investment by the pharmaceutical industry provides hope that an efficacious serogroup B meningococcal vaccine can be developed.

Margaret Fitzgerald, Suzanne Cotter, HPSC
Mary Cafferkey and Karen Murphy, IMMRL

Acknowledgements
The authors wish to thank all involved in the surveillance of meningococcal disease in Ireland and who have contributed data for this report. These are the Medical Officers, Specialists in Public Health Medicine and Surveillance Scientists in the Departments of Public Health and the Microbiologists and Medical Scientists in the laboratories.

References on request

Voluntary Antenatal HIV Testing in Ireland: 2002 to 2004

Background

Transmission of HIV infection from a mother to her baby can be dramatically reduced or prevented by treatment of mother and child, management of the delivery and avoidance of breastfeeding. The combined effects of these interventions is reported in some studies to reduce the transmission from 15-35% to 2% or less. [1,2,3] Measures to prevent transmission can only be offered if HIV infection is diagnosed before or during pregnancy.

Antenatal HIV testing aims to:

- Identify HIV positive women so that they can receive optimal care
- Decrease the incidence of mother-to-child transmission of HIV
- Provide an opportunity to prevent transmission of HIV to sexual partners of pregnant women

Voluntary antenatal HIV testing was introduced in 1999 and a system for monitoring and evaluating this programme was established in 2001. The Health Protection Surveillance Centre (HPSC) collects data on a quarterly basis from 22 maternity units/hospitals throughout the country. In the main, hospitals provide data for both public and private patients, although some hospitals are unable to provide data on private patients.

Table 1 describes the data collected between 2002 and 2004 from 22 maternity units/hospitals. It is important to note that the data presented are incomplete as some hospitals were unable to provide complete information on the uptake of antenatal HIV testing and some hospitals were unable to provide information on private patients. The reason that the number of women offered testing was lower in 2003 and 2004 is that a large unit submitted incomplete data for 2003 and was unable to provide data for 2004.

Table 1: Antenatal HIV testing data (2002 to 2004)

	Year		
	2002	2003	2004
Number offered the HIV antenatal test	54,884	48,274	42,276
Number who accepted the HIV antenatal test	52,101	46,860	41,588
Uptake of HIV antenatal test (%)	94.9%	97.1%	98.4%
Number of women HIV positive	156	146	103
Number newly diagnosed as HIV positive	113	94	40
Rate of positive tests per 1000 patients tested	2.99	3.12	2.48
Number of births per year (Source: CSO)	60,503	61,517	61,684

A more detailed report on the results of the antenatal screening programme is available on the HPSC website at www.hpsc.ie/A-Z/HepatitisHIVAIDSandSTIs/HIVandAIDS/AntenatalHIVTesting/.

Discussion

Although incomplete, these data highlight the effectiveness of the antenatal HIV testing programme. Between 2002 and 2004, 247 women who were not previously known to be HIV positive, were diagnosed as HIV positive.

The rate of HIV positive tests (per 1000 women tested) decreased from 3.12 in 2003 to 2.48 in 2004. Some insight into this trend may be deduced from the HIV case based reporting dataset, which is based on voluntary anonymised reports of newly diagnosed HIV infections in Ireland. Since 2003, the data collected have included information in relation to pregnancy status at HIV diagnosis. Although data are not provided in all cases, there was a marked reduction between 2003 and 2004 in the number of newly diagnosed HIV infections reported through the system among women who were pregnant at diagnosis. This reduction is mainly among women from sub-Saharan Africa, where the numbers of infections among pregnant women dropped from 75 in 2003 to 30 in 2004. It is important to emphasise that the data are incomplete and it remains to be seen whether the downward trend in the rate of newly diagnosed infections among women screened antenatally for HIV infection will continue.

Kate O'Donnell and Mary Cronin, HPSC

Acknowledgements
We would like to thank staff in the maternity hospital/units for providing the above data and the departments of public health and laboratory staff in collating the data.
Kate O'Donnell and Mary Cronin

References on request

Chikungunya Fever

Since March 2005, more than 20% of the population of the island of Réunion in the Indian Ocean have been affected with Chikungunya fever. Mayotte, Mauritius and the Seychelles have also reported cases. Cases in people returning from these islands have also been reported in France, Germany, Italy, Norway and Switzerland. It is caused by an arbovirus transmitted from human to human by an infected *Aedes* mosquito.

Illness generally follows 4 -7 days after the bite of an infected mosquito and presents with sudden onset of fever with joint and muscle pain, headache and conjunctivitis. It tends to be a mild illness and most patients recover fully.

A likely health care associated transmission of Chikungunya fever was reported in France. A health care worker became ill after taking a blood sample from a patient with acute Chikungunya fever who had returned from Réunion. Gloves were not worn during the procedure and while he did not recall a needle stick injury, potential contact with blood occurred when he applied pressure with cotton wool to the venous puncture site.

This event is a reminder for all to adhere to standard precautions in health care and to wear gloves during venous puncture.

Travel advice for international travellers may be obtained at: http://www.hpsc.ie/A-Z/Vectorborne/TravelAdvicefor InternationalTravellers/