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EPI-INSIGHT

DISEASE SURVEILLANCE REPORT OF NDSC, IRELAND

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In Partnership for Prevention and Protection

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Pertussis in the Mid-Western Health Board

Five laboratory-confirmed cases of pertussis, aged between 7 weeks and 18 years, have been identified in the Mid-Western Health Board since May 27th. One was serologically confirmed and four were culture positive. These figures are striking when Mid-Western Regional Hospital Laboratory data are examined - no positive culture in 2000 and one per year in 2001, 2002 and 2003; four positive serology results in 2000, none during 2001, six in 2002 and none in 2003. There were ten additional clinically suspected cases aged one to 18 years.

Nine (4 confirmed cases) of the fifteen cases had not received any pertussis containing vaccines. One child (aged one year) had two doses and two children (aged 13 years and one year) had received three doses. The immunisation status of the other three is unknown. Two confirmed and five suspected cases were linked and all were unvaccinated. The other cases were not linked. Four children ranging in age from 7 weeks to 6 years were hospitalised. None of these children had received pertussis vaccine.

Vaccination provides the best protection against pertussis for children between two months and seven years of age. However, immunity wanes after five to ten years. Pertussis causes prolonged coughing spells. Children often "whoop" or vomit after coughing paroxysms. Infection is most severe in infants who can become exhausted from coughing and have difficulty in feeding and breathing. Illness may last two months or more and rarely, in severe cases, can result in brain damage. It is recommended that affected children should not attend school or crèche until they have finished a 5-day erythromycin course and are well enough to return. Non-immunised contacts and those under two months of age may benefit from prophylactic erythromycin. Parapertussis is a similar illness but symptoms are usually milder.

Investigations for pertussis can vary between laboratories and advice on specimen type and transport should be sought from the local laboratory. The optimal time for specimen collection is at the onset of symptoms and before anti-microbial treatment is initiated. *Bordetella* serology may also be recommended as only approximately 60% of clinical cases yield organism growth.

Clinicians and laboratories are required to notify suspected and confirmed cases of pertussis to the Medical Officer of Health.

Case definition

Clinical description

A clinical picture compatible with pertussis i.e. a cough lasting at least 2 weeks with one or more of the following: paroxysms of coughing, inspiratory "whoop", or post-tussive vomiting, without other apparent cause.

Laboratory diagnosis

Laboratory diagnosis requires one of the following: demonstration of a specific pertussis antibody response in the absence of recent vaccination; detection of nucleic acid; isolation of *B. pertussis* from a clinical specimen.

Case classification

- A possible case is one that meets the clinical case definition.
- A probable case is one that meets the clinical case definition and has an epidemiological link.
- A confirmed case is one that is laboratory confirmed.

Rose Fitzgerald, Denis Barron, Dominic Whyte, MWHB

National Hepatitis C Database

A national hepatitis C database is being established on the recommendation of the Consultative Council on Hepatitis C. It will be based at the National Disease Surveillance Centre and will be funded by the Department of Health and Children. The database will collect and collate information on people (approximately 1,600) who were infected with hepatitis C through the administration of blood and blood products within the State. These include recipients of anti-D immune globulin and blood transfusion, people with haemophilia and those who received treatment for renal disease.

The purpose of the database is to follow the natural history of the infection, to monitor the uptake of services and the outcomes of treatment, and to provide information for the planning of future health services. It will be overseen by a steering committee comprising representatives from patient support groups, consultant hepatologists, service providers and the Department of Health and Children. The committee will report to the Consultative Council on Hepatitis C.

Consultant hepatologists are currently writing to patients to ask them to consent to participate in the database. Data will be collected from existing medical records in the eight designated hepatology units. Participation in the Hepatitis C Database is voluntary and it will not contain people's names or addresses. Further information is available at www.hcvdatabase.ie.

Epidemiology of Verotoxigenic *E. coli* O157 in Ireland, 2003

Verotoxigenic *E. coli* (VTEC) are so-called because of their ability to produce one or both of two verotoxins (VT1 and VT2). They cause a wide range of illnesses, from mild diarrhoea to haemorrhagic colitis with severe abdominal pain and bloody diarrhoea. Illness is usually self-limiting and resolves after about eight days. Historically, 9% of symptomatic Irish cases have developed haemolytic uraemic syndrome (HUS), a form of renal failure.[1] In children under 15 years in Ireland, one in eight with confirmed VTEC O157 develop HUS (one in seven of symptomatic cases).

The primary reservoir is cattle, although VTEC have been isolated from a variety of healthy animal carriers including sheep, horses, goats and wild birds. While this organism was first recognized as a foodborne pathogen (the 'burger bug'), it is now known that it can also be transmitted through water, the environment and by direct contact with animal carriers. Person-to-person spread is important in households, crèches and institutions.

E. coli O157 is the most commonly reported VTEC in Ireland,[1] the UK and the US, although other serogroups are capable of causing the same spectrum of illness, including O26, O111, O103 and O145. The Public Health Laboratory at Cherry Orchard Hospital, Dublin provides an *E. coli* O157 and non-O157 diagnostic service for clinical and food samples, including *E. coli* serotyping and verotoxin detection. Phage typing for VTEC O157 is carried out at the Central Public Health Laboratory, Colindale, London.

Methods

This is the fifth year that NDSC, in co-operation with Directors of Public Health in each health board region, have operated the epidemiological surveillance system for VTEC O157. Details on how this system operates have been outlined in previous reports.[1]

The case definitions that have been used in this system are as follows:

- *Suspected*: a case of post-diarrhoeal HUS or thrombocytopenic purpura (TTP).
- *Probable*: a case with isolation of *E. coli* O157 from a clinical specimen (asymptomatic or symptomatic), pending confirmation of H7 flagellar antigen or Shiga toxin, or a clinically compatible case that is epidemiologically linked to a confirmed or probable case.
- *Confirmed*: a case that has isolation of *E. coli* O157:H7 from a specimen or isolation of Shiga toxin-producing *E. coli* O157:NM (non-motile) from a clinical specimen.

Probable cases that are subsequently confirmed as not H7 or Shiga toxin producing are removed from the database. A *travel-associated* case is defined as one where there has been international travel within two weeks prior to onset of illness.

Results

Eighty-six confirmed cases of VTEC O157 that had a date of onset of symptoms during 2003 were reported to NDSC, an incidence rate of 2.1 per 100,000. The numbers of confirmed cases and the crude incidence rates of VTEC O157 in Ireland from 1999 to 2003 are shown in table 1.

Table 1. Number of confirmed cases of VTEC O157 and crude incidence rate (95% CI) in Ireland, 1999-2003

Year	Numbers of confirmed cases (including non-residents[a])	Crude incidence rate[b] (95% CI) per 100,000 population
1999	51	1.4 (1.0-1.8)
2000	37(42)	0.9 (0.6-1.3)
2001	50 (52)	1.3 (0.9-1.6)
2002	68 (70)	1.7 (1.3-2.2)
2003	82 (86)	2.1 (1.6-2.6)

[a] Cases diagnosed/investigated in Ireland but who are not resident in Ireland
[b] Data from 1996 census were used to calculate the rate in 1999 while the 2002 census was used to calculate rates from 2000-2003, rates exclude non-residents.

Regional distribution

As in previous years, regional variation was noted in the numbers of cases reported (table 2 and figure 1), with the highest incidence rates this year in the South Eastern, Midland, Southern and North Western Health Boards.

Table 2. Number, crude incidence rate (CIR) and age-standardised incidence rate (ASIR) with 95% confidence intervals of confirmed cases of VTEC O157 by health board of residence, Ireland, 2003

Health Board	Number of cases (incl. non-resident cases)	CIR (95% CI) per 100,000 population	ASIR (95% CI) per 100,000 population
ERHA	12	0.9 (0.4-1.3)	0.9 (0.4-1.3)
MHB	8	3.5 (1.1-6.0)	3.4 (1.0-5.7)
MWHB	6 (8)	1.8 (0.4-3.2)	1.8 (0.4-3.2)
NEHB	1	0.3 (0.3-0.8)	0.3 (0.2-0.8)
NWHB	7	3.2 (0.8-5.5)	-*
SEHB	20 (21)	4.7 (2.7-6.8)	4.7 (2.7-6.8)
SHB	20	3.4 (1.9-5.0)	3.5 (1.9-5.0)
WHB	8 (9)	2.1 (0.6-3.6)	-*
Total	**82 (86)**	**2.1 (1.6-2.6)**	

All rates in this table exclude non-resident cases
*age was not reported for all cases in these health boards

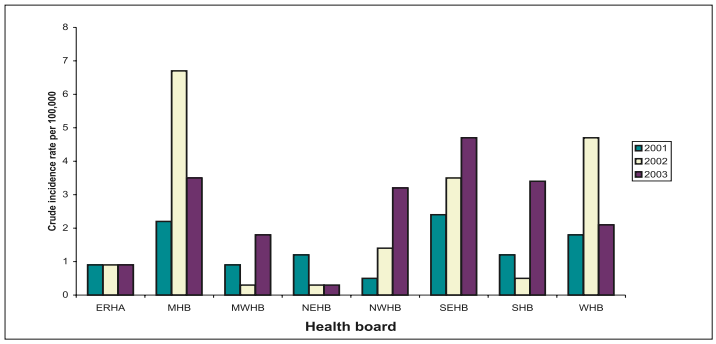

Figure 1: Crude incidence rate (CIR) of confirmed resident cases of VTEC O157 by health board of residence, Ireland, 2001-2003

Age-sex distribution

The highest incidence was recorded in young children (figure 2), a trend also noted over the last few years. This was particularly pronounced among male cases. There was a slightly higher incidence among adult females than adult males.

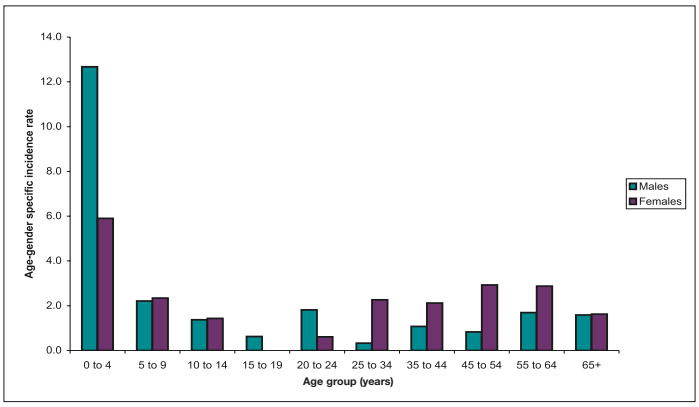

Figure 2. Age- gender specific incidence rate (per 100,000 population) of confirmed cases of VTEC O157, Ireland 2003

Clinical features

In total, 68 out of the 86 confirmed cases (79%) were reported as symptomatic. Reported symptoms included: bloody diarrhoea in 31 cases (46%), and HUS in 4 cases (6%). Of the 4 cases of HUS, 3 occurred in children under 15 years of age and there was one adult case.

Seasonality of VTEC O157 cases

The largest number of cases in 2003 occurred in the third quarter, with a peak in August (figure 3), very similar to the trend observed in 2002.

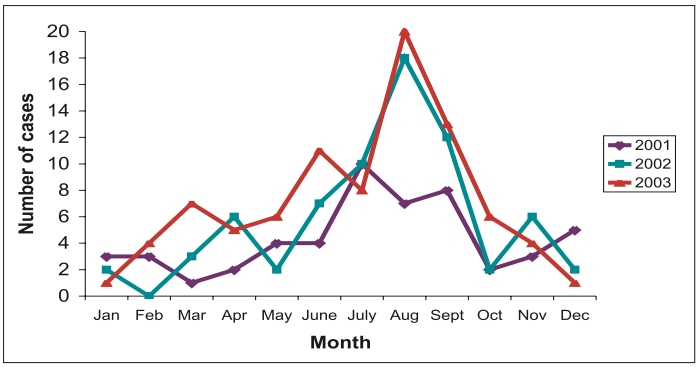

Figure 3. Confirmed cases of VTEC O157 by month of onset of symptoms, Ireland, 2001-2003

Travel-association
Eight cases were travel-associated. The countries visited were the Canary Islands (4), Italy (2), Austria/Germany (1) and Turkey (1).

Epidemiological investigation
Two general outbreaks of VTEC O157 occurred during the summer of 2003.[3] Both were centred in hotel restaurants in the ERHA. Five confirmed, twelve probable and over 100 possible cases were reported in one outbreak; seven cases were hospitalised. Investigations found no relationship between any food or drink and the development of illness. In the second outbreak, 3 confirmed cases including one who developed HUS, and over 30 possible cases were reported. There were two hospital admissions. Similarly, the source of this outbreak was not established. Actions taken during both outbreaks included reviews of restaurant procedures and retraining of staff.

As a result of following up apparently sporadic cases in 2003, an additional 13 family/household outbreaks were detected by health board personnel among 36 confirmed cases but no links were confirmed with any food or water sources.

For six households served by private water supplies (comprising 10 confirmed cases), there was documented evidence of either coliforms or *E. coli* in the water supply. However, *E. coli* O157 was not detected in any instance.

Risk exposures
Descriptive epidemiological information was collected on all reported cases in an attempt to identify potential risk factors for exposure to VTEC. Three (3.5%) cases reported consumption of unpasteurised milk or cheese. Contact with farm animals was reported in 17 (20%) cases. Of 56 cases where information was collected on water source, the water supply was public in 36 (64%) cases, private well water in 17 (31%) cases, from a group scheme in 2 (3.6%) cases and recorded as other (not public and not well) in one (1.8%) case.

Non-O157 VTEC
Non-O157 VTEC, in particular VTEC O26, remain a concern in Ireland. While the enhanced surveillance system did not routinely collect information on these subtypes in 2003, four confirmed cases of VTEC O26 (1 in SEHB, 2 in NWHB and 1 in MWHB) were reported to the surveillance system. Most importantly, one child developed HUS in 2003 as a consequence of infection with *E. coli* O26.

Discussion

The enhanced surveillance system for VTEC O157 has been operating for 5 years and provides valuable information on the epidemiology of VTEC O157 in Ireland. Eighty-six confirmed cases of VTEC O157 infection (2.1 per 100,000 population) were reported in Ireland in 2003, the highest annual number on record. This compares with provisional incidence rates of 3.1/100,000 in Northern Ireland,[4] 2.9/100,000 in Scotland (Mary Locking, SCIEH, personal communication) and 1.3 in England and Wales (Sue Le Baigue, CDSC, Colindale, personal communication) in 2003.

A further 4 cases of VTEC O26 were reported to the enhanced surveillance system, increasing the overall VTEC rate to 2.2 per 100,000. The potential for illness by non-O157 VTEC should not be overlooked; cases of VTEC O26 have been reported in Ireland every year since 1999.

A large proportion of cases in 2003 were reported in late summer with almost 48% per cent of cases having a date of onset between July and September. While a higher incidence during this time is a feature of VTEC infection, the particularly high rate in the summer of 2003 was in part influenced by the occurrence of 2 general outbreaks centred in the ERHA involving 8 cases, and in part by the reporting of 8 confirmed VTEC O157 cases with a date of onset in August from the SHB alone. The SHB cases included one family outbreak of 3 cases, and while geographical and temporal clustering was noted among 4 of the remaining 5 cases, no epidemiological links were identified and 4 different phage types were represented, making a general outbreak unlikely.

No sources or transmission routes were definitively identified for any of the VTEC cases reported in 2003 although person-to-person transmission is likely to have played some role in family/household outbreaks. In several case control studies internationally, contact with farm animals and farming environments has been shown to be a strong risk factor for VTEC infection among sporadic cases.[5] In 2003, 20% of cases here reported contact with farm animals although it has not been demonstrated that this was the route in which infection occurred in these instances. In Ireland, there is increasing concern about the potential of water as a transmission route. Those who consume water from supplies other than public water supplies are over-represented among VTEC cases. The 2002 census recently reported that 72% of persons in Ireland were served by public water supplies.[6] Only 64% of VTEC O157 cases in 2003 had public water supplies. Moreover, for a number of households served by private supplies, there was documented evidence of either coliforms or *E. coli* in their water supply, although *E. coli* O157 was not detected in any instance.

The importance of co-operation in surveillance at national and international level was demonstrated during epidemiological investigations of some of the VTEC cases reported here. A number of foreign tourists were involved in the 2 general outbreaks in Ireland in the summer of 2003. Some had travelled on to other regions of the country prior to diagnosis, while others had travelled home, necessitating national and international collaboration.

Significant changes have been made in 2004 in the reporting of cases of VTEC. Illness caused by enterohaemorrhagic *E. coli* (EHEC) became a notifiable disease on January 1st 2004. Previously, VTEC were notified under the category of 'Food Poisoning (bacterial other than *Salmonella*)'. Under EHEC, all verotoxin positive *E. coli*, and *E. coli* of serogroups O157, O26, O111, O103, O145 regardless of whether verotoxin producers, are reported.

Patricia Garvey and Paul McKeown, NDSC

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NEWLY DIAGNOSED HIV INFECTIONS IN IRELAND, 2003

Introduction

During 2003, an estimated 4.8 million people worldwide became newly infected with HIV, the largest number in a single year since reporting began.[1] Today, an estimated 37.8 million people are living with HIV/AIDS and the epidemic has killed over 20 million people since the first cases of AIDS were identified in 1981.[1]

A report on newly diagnosed HIV infections in Ireland in 2003 was recently published and is available on the NDSC website.[2] This is the second annual report published since the introduction of HIV case based reporting in Ireland in July 2001.

Results

During 2003, there were 399 newly diagnosed cases of HIV in Ireland, an increase of 10% compared to 2002 (364 cases). The cumulative total number of HIV infections reported in Ireland to the end of December 2003 is 3,408.

Exposure category

Of the 399 newly diagnosed cases, 221 were heterosexually acquired. This compares to 232 in 2002 and 173 in 2001. There were 75 new diagnoses among men who have sex with men (MSM) during 2003 compared with 46 in 2002 and 71 in 2001. There were 47 new diagnoses among injecting drug users (IDUs) during 2003 compared with 50 in 2002 and 38 in 2001. The exposure category was not reported for 39 of the newly diagnosed infections, making analysis of data and interpretation of trends difficult. HIV infection was newly diagnosed in 14 children during 2003. Of the 14 children, 12 were infected through mother-to-child transmission. In addition, there were a further 145 babies born to a HIV infected mother during 2003 whose infection status is indeterminate (i.e. they do not meet the criteria for HIV infection and are <18 months at time of test or their antibody status is unknown). Figure 1 shows the number of cases diagnosed annually in Ireland from 1994 to 2003 for the three major risk groups, heterosexuals, MSM and IDUs.

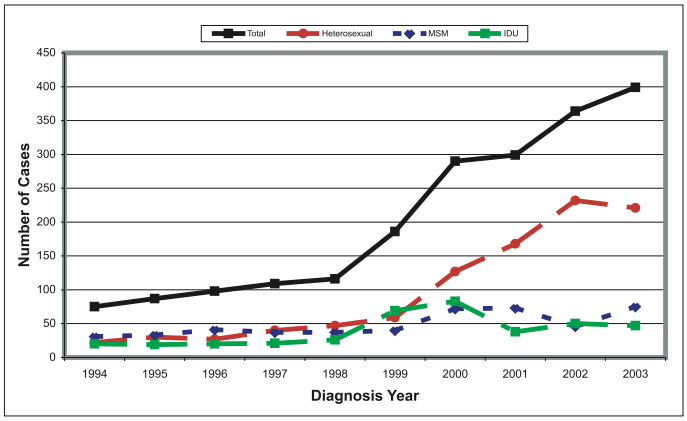

Figure 1. Newly diagnosed HIV infections in Ireland among heterosexuals, MSM and IDUs (1994 to 2003)

Age and sex distribution

Of the 399 newly diagnosed cases, 51% were male and 49% were female. During 2003, 79% of cases were aged between 20 and 40 years of age at HIV diagnosis and the mean age at HIV diagnosis was 30.8 years. Of the 196 females with newly diagnosed HIV infection in 2003, 81 were pregnant at HIV diagnosis. Information relating to pregnancy status is unavailable for 30 of the female cases.

Geographic origin

Of the 399 cases diagnosed in 2003, 133 were born in Ireland and 198 were born in Sub-Saharan Africa. Information on geographic origin is unavailable for 41 of the newly diagnosed cases. Of the reported heterosexual cases, 82% were born in Sub-Saharan Africa and 14% were born in Ireland. Seventy five percent of the newly diagnosed cases reported among MSM and 96% of the newly diagnosed cases reported among IDUs were born in Ireland.

Discussion

Between 1998 and 2003, there was a 243% increase in the number of HIV infections diagnosed annually in Ireland. This increase in largely due to a substantial rise in the number of heterosexually acquired cases. The majority of heterosexually acquired cases diagnosed in 2003 were born in Sub-Saharan Africa. This mirrors the epidemiology of HIV in other Western European countries and is not surprising given that Sub-Saharan Africa is the area of the world that is most severely affected by the global pandemic.[1]

The increase in HIV infections diagnosed among MSM may be a reflection of increasing risky sexual behaviour in this group. Recent increases in risky sexual behaviour, HIV and other sexually transmitted infections (STIs) have been reported among MSM from Western Europe and the USA.[3] Having another sexually transmitted infection increases the risk of acquisition and transmission of HIV and it is of concern that notifications of STIs in Ireland have increased by 370% between 1989 and 2002. [4]

This report highlights the continued increase in the annual number of newly diagnosed HIV infections in Ireland and emphasises the continuing need for appropriate prevention and treatment services for all risk groups in Ireland, including gay and bisexual men, migrants and ethnic communities.

K O'Donnell and M Cronin, NDSC

Acknowledgements

NDSC wish to thank all those who have contributed to this report, including the National Virus Reference Laboratory, departments of public health, microbiology laboratories, consultants in infectious disease/GUM and all other clinicians involved.

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Salmonella Monthly Report (July 2004):

Strains are allocated to months based on the date of receipt of the isolate from the referring laboratory. These figures are provisional as work may not be finished on particular strains at the time of publication. Data are provided courtesy of Prof Martin Cormican and Dr Geraldine Corbett-Feeney, NSRL.

Health Board	E	M	MW	NE	NW	SE	S	W	Total
S. Bredeney	3	0	0	0	0	0	0	1	4
S. Chester	0	0	0	0	0	0	0	1	1
S. Corvallis	1	0	0	0	0	0	0	0	1
S. Enteritidis	15	4	1	0	1	0	4	2	27
S. Panama	1	0	0	0	0	0	0	0	1
S. Poona	0	0	0	0	0	0	0	1	1
S. Rubislaw	0	0	1	0	0	0	0	0	1
S. Stanley	0	0	0	0	0	1	0	0	1
S. Typhi	1	0	0	0	0	0	0	0	1
S. Typhimurium	9	3	3	0	3	5	1	0	24
S. Virchow	0	0	0	0	0	1	0	0	1
S. Zanzibar	0	0	0	0	0	0	0	1	1
Total	**30**	**7**	**5**	**0**	**4**	**7**	**5**	**6**	**64**