EPI-INSIGHT

IONAD NAISIUNTA FAIRE GALAIR

Disease Surveillance Report of NDSC, Ireland

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IN THE NEWS

Outbreaks of Infectious Intestinal Disease among Coach Tour Passengers, Ireland: September 2002.

Several outbreaks of infectious intestinal disease (IID) among passengers on board tour coaches have been reported in the Republic of Ireland, in September 2002. Most of the affected passengers have been elderly people from the United States and the United Kingdom. Microbiological confirmation is awaited but clinically and epidemiologically the illness is consistent with Norwalk-like virus infection.[1] Similar outbreaks were described in Scotland earlier this summer.[2]

The Republic of Ireland has experienced several outbreaks of IID caused by Norwalk-like virus (NLV or norovirus) since the beginning of 2002. During the first six months of 2002, 90 outbreaks of IID had a confirmed or suspected viral aetiology and resulted in 3,630 known or suspected cases of illness. During the same period in 2001, there were 15 outbreaks and 700 cases of illness. Some, but not all, of this increase can be explained by improved surveillance. Many of the outbreaks in 2002 have occurred in hospitals, residential institutions, and, particularly during the summer, hotels. During late August and early September, outbreaks of IID confirmed or suspected as being due to NLV were reported in 8 hotels in Ireland, resulting in at least 150 cases of illness.

Movement of tourists by bus is very common in Ireland during the summer, and overseas visitors often travel between hotels as part of their itinerary. Tours tend to criss-cross the country, congregating at larger hotels in popular tourist destinations. The routes taken by such tours can be lengthy and often entail many overnight stays at different hotels. Many of the tourists on such tours are elderly and may be particularly vulnerable to complications from infection.

One large hotel in a well-known tourist destination in the south of the country had an outbreak of illness due to NLV earlier in September that affected over 50 guests. At least 11 different tour groups had passed through this hotel shortly before and during the period when the outbreak was recognised. Two of these tour buses, carrying about 80 passengers, travelled to the west of Ireland. Six passengers became ill during the journey and up to 20 passengers had been ill before travelling from the affected hotel or became ill after arrival at their destination.

The National Disease Surveillance Centre is currently aware of at least 5 tour buses that have travelled between hotels, carrying more than 200 tourists of whom 10 became ill. It is estimated that as many as 40 passengers had been ill before travelling, or after reaching one of the hotels on the tour. Guests from different tours have moved on to Northern Ireland, Great Britain (England, Wales and Scotland), other European countries, and the United States.

Health professionals with responsibility for managing these outbreaks have been faced with concern from hoteliers and tour operators about the introduction of ill or potentially ill people into apparently unaffected hotels. Guidance on the management of outbreaks of illness due to NLV has been produced for use in hospitals.[3] More recently, useful guidance on management of outbreaks of illness due to NLV in hotels, developed for the Federation of Tour Operators, has been distributed widely within the tourist industry.[2]

Although management of outbreaks in individual hotels or facilities is becoming clearer, there is less clarity about where responsibility lies for ill passengers in transit from one hotel or lodgings to another. It is intended that guidance will be developed in Ireland to help health professionals and the hotel and tour industries to manage this issue in a way that minimises transmission of disease while protecting the health of both travelling and resident guests and staff.

Dr Paul McKeown, NDSC

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Epidemiology of Verocytotoxigenic E. coli 0157 in Ireland, 2001

Introduction

E. coli O157 and other VTEC infections cause a wide range of illnesses, from mild diarrhoea to haemorrhagic colitis with severe abdominal pain and bloody diarrhoea. The illness is usually self-limiting and resolves after about eight days. However, in one-third to one-half of diagnosed cases the patient is hospitalised and 2-7% develop haemolytic uraemic syndrome (HUS), a form of renal failure whose fatality rate has been reported to be 3 to 17%. HUS is a more likely complication in young children. In adults, VTEC infection may be followed by thrombotic thrombocytopaenic purpura (TTP).[1]

At present in Ireland there is no statutory requirement to notify *E. coli* O157:H7. We also do not yet have a national reference laboratory facility for confirmation of toxin production and definitive typing of VTEC. However, since October 2000, the Public Health Laboratory at Cherry Orchard Hospital, Dublin has commenced provision of an *E. coli* O157 and non-O157 diagnostic service for clinical and food samples, including *E. coli* serotyping and verocytotoxin detection. This service has improved the diagnostic facilities for VTEC infections in the Republic of Ireland and diminishes the prolonged turn-around-times for services available in the United Kingdom. Phage typing for clinical VTEC isolates is accessed at the Laboratory of Enteric Pathogens, Colindale.

Methods

In 1999, NDSC in co-operation with Directors of Public Health in each health board region established an epidemiological surveillance system for VTEC O157:H7. Since 1999, specialists in public health medicine and area medical officers have participated in a system whereby a standard dataset of information is collected on each case identified and reported to NDSC. This information includes socio-demographic data, clinical data, possible risk factors and information on links between cases. An initial notification to NDSC is made on the date of notification of the case to the health board, and follow-up information is returned when available. Several participants in the system also notify other non-O157: H7 verocytotoxin-producing *E. coli*. The case definitions that have been used in this system are as follows:

- Suspected: a case of post-diarrhoeal HUS or TTP.
- Probable: a case with isolation of *E. coli* 0157 from a clinical specimen (asymptomatic or symptomatic), pending confirmation of H7 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* 0157:H7 from a specimen or isolation of Shiga toxin-producing *E. coli* 0157: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

In 2001, 52 confirmed cases of VTEC O157 were notified to NDSC. Two of these cases occurred in non-Irish residents and therefore were not included in the estimation of population-based rates. These cases are however, included in the descriptive epidemiology. The incidence of VTEC O157 in Ireland from 1996-2001 is shown in table 1.

Table 1. Number of cases of confirmed VTEC 0157 and crude incidence rate (95% CI) in Ireland, 1996-2001

Year	Numbers of confirmed cases	Crude incidence rate (95% CI) per 100,000 population
1996	8	0.2 [0.1-0.4]
1997	31	0.8 [0.5-1.2]
1998	76	2.1 [1.6-2.6]
1999	51	1.4 [1.0-1.8]
2000*	37 (42)	1.0 [0.7-1.4]
2001**	50 (52)	1.4 [1.0-1.8]

*42 cases notified, but 5 occurred in non-Irish residents
**52 cases notified, but 2 occurred in non-Irish residents

There has been some regional variation in the numbers of cases reported (table 2).

Table 2. Crude incidence rate (CIR) and age standardised incidence rate (ASIR) with 95% confidence intervals of confirmed cases of VTEC 0157 by health board, Ireland, 2000-2001

	2001		2000	
Health board	CIR [95% CI] per 100,000	ASIR [95% CI] per 100,000	CIR [95% CI] per 100,000	ASIR [95% CI] per 100,000
ERHA	0.9 [0.4-1.5]	0.9 [0.4-1.5]	0.5 [0.1-0.9]	0.5 [0.1-1.0]
MHB	2.4 [0.3-4.6]	2.4 [0.3-4.6]	3.4 [0.9-5.9]	3.3 [0.9-5.7]
MWHB	0.9 [0.1-2.0]	0.9 [0.1-2.0]	0.9 [0.1-2.0]	0.9 [0.1-2.0]
NEHB	1.3 [0.0-2.6]	1.3 [0.0-2.5]	0	0
NWHB	0.5 [0.5-1.4]	0.6 [0.5-1.6]	0.5 [0.5-1.4]	0.4 [0.4-1.2]
SEHB	2.6 [1.0-4.1]	2.5 [1.0-4.1]	1.5 [0.3-2.8]	1.5 [0.3-2.8]
SHB	1.3 [0.3-2.3]	1.2 [0.3-2.3]	0.5 [0.0-1.2]	0.5 [0.1-1.2]
WHB	2.0 [0.5-3.5]	2.0 [0.5-3.5]	2.8 [1.1-4.6]	2.9 [1.1-4.7]
Total	**1.4 [1.0-1.8]**		**1.0 [0.7-1.4]**	

Gender data were available for 47 cases, of which 28 were female (60%) and 19 (40%) were male. The majority of cases occurred in young children in the 1-4 year age group, followed by the 25-44 age-group. However, when the age-specific incidence rate in cases in Irish residents is examined, the high incidence in the 0-4 year olds is more notably reflected (figure 1).

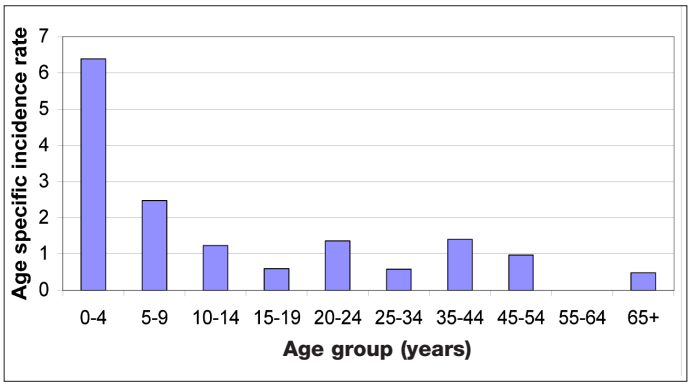

Figure 1. Age-specific incidence rate (per 100,000 population) of confirmed cases of VTEC 0157 in Irish residents, Ireland 2001

Seasonality of VTEC O157

The majority of cases occurred in late summer/ early autumn, with a peak in September (figure 2).

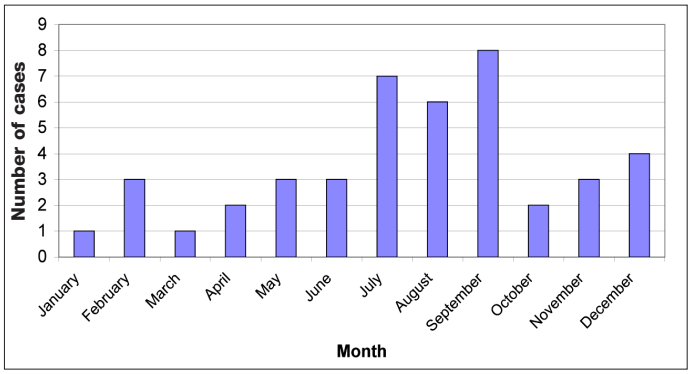

Figure 2. Confirmed cases of E. coli O157:H7 by month of onset of symptoms (or of diagnosis, if asymptomatic), Ireland, 2001

Travel-association
Six cases were travel-associated (table 3). The countries visited within 14 days of onset of illness were Canary Islands (2), Turkey (2), Finland and Canada.

Table 3.The number of confirmed cases of E. coli O157:H7 by phage type, 2001

Phage type	Not travel associated	Travel associated	Total
14	2	0	2
32	30	3	33
8	6	2	8
71	0	1	1
N/A	8	0	8
Total	**46**	**6**	**52**

Clinical Features
In total, 40 out of 52 confirmed cases (77%) were symptomatic, with 12 cases (23%) being asymptomatic. Reported symptoms included bloody diarrhoea in 24 (60%) of cases, and HUS in 3 cases (8%). The three cases of HUS occurred in children under 12 years of age. Two were female and one was male. Only one of the cases reported was part of an outbreak. The child was attending a crèche and several other children in the crèche became ill.

Microbiological Investigation
In 2001, a number of food and water samples epidemiologically linked to cases were examined for the presence of VTEC organisms but no positives isolates were found.

Phage typing of isolates revealed that as in previous years, the predominant type detected was PT 32. The population of phage types was found to be more homogeneous than that seen in 2000 when, although the majority of specimens were still PT 32, the following phage types were also detected viz., PT 2, 4, 8, 14, 21, 21/28, 31, 32, 38, and 39. In contrast in 1999, the only two phage types detected were PT 32 and PT 21/28.

Epidemiological Investigation
Active investigation of many of the cases lead to the identification of further, previously undiagnosed VTEC cases. As a result of following up apparently sporadic cases, eleven family outbreaks and one generalised outbreak that occurred in a crèche were detected. A more detailed analysis of these outbreaks will be reported in a later issue of Epi-Insight.

Descriptive epidemiological information was collected on cases in order to attempt to identify potential risk factors for exposure to VTEC. A number of suspect foods were reported by cases but as the majority of these were from sporadic cases it was impossible to epidemiologically link them. No cases reported consumption of unpasteurised milk or cheese.

Of 39 cases where information was collected on water source, the water supply was public in 27 (69%) cases, private well water in 11 (28%) cases, and from a group scheme in one case (3%). Contact with farm animals was reported in 10 (25%) cases (n=40).

Information on whether the case attended a crèche, or was an in-patient in a nursing home, hospital or other institutionalised setting, was also collected. The index case attended a crèche in 7 cases. In a further 7 cases the index case attended a primary school. Three cases were identified as food handlers. One case was an in-patient in hospital when VTEC was detected. No cases attended a nursing home facility.

Non-O157 VTEC
There were four cases of confirmed VTEC O26 reported in 2001, three cases from the North Western Health Board and one from the Southern Health Board. All the cases were children and one attended a crèche. None of the cases developed HUS.

Discussion
Since the establishment of the NDSC Enhanced Surveillance system for VTEC O157 in 1999, we have been building up a picture of the epidemiology of this group of organisms in Ireland and comparing trends with other countries. The incidence rate in the Republic of Ireland in 2001 was 1.4 per 100,000 population compared to 1.45/100,000 in England and Wales, and 4.6/100,000 in Scotland.

Undoubtedly, VTEC infections cause substantial morbidity and mortality. The severe complications that can be associated with infection, namely HUS in children and TPP in adults are associated with significant mortality. In 2001, in Ireland, 60% of cases reported symptoms of bloody diarrhoea and 8% of cases developed HUS.

Studies undertaken worldwide over the past number of years have revealed the full complexity and ecology of VTEC O157 infection. One notable feature has been the range of modes of transmission of this organism. Several modes of transmission from the animal reservoir have been demonstrated (food-, water-, environmental- and animal-person spread). In addition, person-to-person transmission has been demonstrated in households, crèches, hospitals and nursing homes. In particular the emergence of direct or indirect transmission from animal and/or the environment has been demonstrated. In Ireland, in 2001, 28% of cases reported drinking water from a private well and 25% of cases reported contact with farm animals in the period prior to onset of illness.

The notification of VTEC O26 cases again in 2001 highlights the importance of extending the enhanced surveillance system to non-O157 VTEC. A Working Group has been set up by a sub-committee of the NDSC Scientific Advisory Committee to review the clinical management and surveillance of VTEC infections in Ireland. It is hoped that one of the recommendations of this review will be to extend the current enhanced system to include all verotoxin-producing serogroups and also to commence surveillance of cases of HUS.

Dr Barbara Foley and Dr Paul McKeown, NDSC

Acknowledgements
We wish to acknowledge the co-operation of microbiologists, medical laboratory scientists, SAMOs, AMOs, SPHMs, surveillance scientists, infection control nurses, PEHOs, and EHOs, for participating in the enhanced surveillance system.

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Immunisation Uptake Statistics for Ireland Quarter 4, 2001 & Quarter 1, 2002

Immunisation uptake statistics for Quarter 4, 2001 and Quarter 1, 2002 are presented. These statistics relate to uptake in children who were 12 or 24 months of age during the above periods and had completed the primary childhood immunisation schedule. The current schedule recommends that children receive three doses of vaccines against diphtheria (D_3), pertussis (P_3), tetanus (T_3), *Haemophilus influenzae* type B (Hib_3), polio ($Polio_3$), group C meningococcal disease ($MenC_3$) and one dose of vaccine against measles, mumps and rubella (MMR_1 uptake measured at 24 months only). Quarter 1, 2002 was the first quarter that $MenC_3$ uptake at 12 months was collated nationally.

Immunisation uptake rates at 12 months improved by 2-3% in Quarter 1, 2002 compared with the previous quarter. The uptake of D_3 and T_3 increased from 70% to 72%, P_3 from 68% to 71%, Hib_3 from 69% to 72% and $Polio_3$ from 69 to 71% (Table 1 & 2). $MenC_3$ uptake was 68% in Quarter 1, 2002 and therefore was lower than those for the other vaccines. This may be a reflection of the fact that the children in this birth cohort were not receiving all three injections (DTaP, Hib and MenC) at the one visit and consequently delayed completing the schedule. With the introduction of the combined 5-in-1 vaccine in July 2001, this delay should not be as issue as the number of injections that could be administered at any one visit has been reduced from three to two.

In Quarter 1, 2002 the uptake rates of D_3, T_3, Hib_3 and $Polio_3$ at 24 months were unchanged from the previous quarter, at 82-83%. P_3 uptake increased by 1% to 81% and MMR_1 uptake also increased by 1%, from 69% to 70% (Table 1 & 2 and Figure 1). Although a very slight recovery was observed in this quarter, MMR_1 uptake is still 13% below the rates reported in Quarter 4, 2000 and 25% below the national target rate. Data on MenC uptake at 24 months are not presented. Depending on the age the children from these birth cohorts presented for vaccination, the number of doses required to complete the MenC schedule varied between one and three doses. The immunisation systems were unable to select out those who had completed the schedule after one or two doses from those who needed additional doses.

Dr Margaret Fitzgerald and Dr Darina O'Flanagan, NDSC

Acknowledgements
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Table 1. Completed Primary Immunisations by 12 and 24 months in Ireland, October – December 2001

	% Uptake at 12 months Cohort born 01/10/2000 – 31/12/2000				% Uptake at 24 months Cohort born 01/10/1999 – 31/12/1999				
	D_3*	P_3	Hib_3	$Polio_3$	D_3*	P_3	Hib_3	$Polio_3$	MMR_1
ERHA	60	59	60	59	78	76	78	78	60
MHB	72	71	72	71	81	77	81	81	70
MWHB	70	68	70	70	83	80	82	82	70
NEHB	79	78	79	78	93	93	93	94	80
NWHB	80	**	79	78	88	**	87	88	75
SEHB	80	79	80	80	87	84	87	87	82
SHB	76	74	75	75	84	81	83	84	74
WHB	71	70	66	70	83	81	82	82	68
Ireland	**70**	**68**	**69**	**69**	**83**	**80**	**82**	**83**	**69**

* T_3 uptake identical to D_3, therefore not presented
**P_3 uptake could not be accurately calculated as DTaP/DT uptake was reported as a combined value

Table 2. Completed Primary Immunisations by 12 and 24 months in Ireland, January – March 2002

	% Uptake at 12 months Cohort born 01/01/2001 – 31/03/2001					% Uptake at 24 months Cohort born 01/01/2000 – 31/03/2000				
	D_3*	P_3	Hib_3	$Polio_3$	$MenC_3$	D_3*	P_3	Hib_3	$Polio_3$	MMR_1
ERHA	63	63	63	61	60	78	76	77	77	60
MHB	64	62	64	63	58	78	75	78	78	64
MWHB	78	76	77	77	76	86	83	85	86	76
NEHB	84	82	83	84	78	91	90	90	90	78
NWHB	81	81	81	81	73	89	89	88	89	81
SEHB	81	80	81	81	79	89	86	88	88	82
SHB	77	76	77	77	74	85	82	84	84	75
WHB	68	67	**	68	66	84	81	83	83	68
Ireland	**72**	**71**	**72**	**71**	**68**	**83**	**81**	**82**	**83**	**70**

* T_3 uptake identical to D_3, therefore not presented
** Hib uptake data not available on this occasion

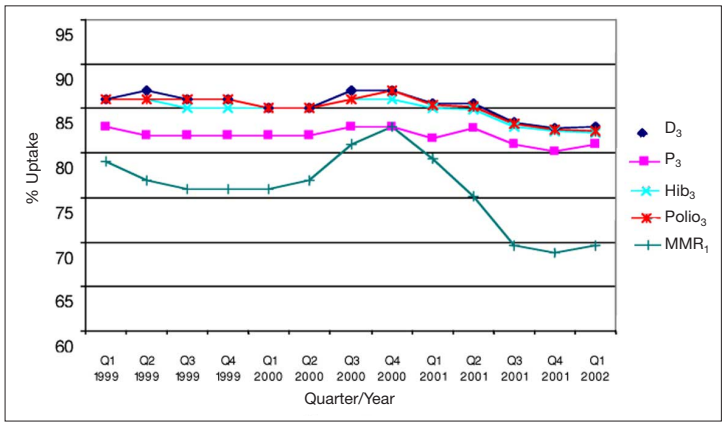

Figure 1.Quarterly immunisation uptake rates at 24 months in Ireland

Immunisation Guidelines for Ireland

The National Immunisation Advisory Committee of the Royal College of Physicians of Ireland has issued an updated document on Immunisation Guidelines for Ireland, 2002. These guidelines are available on the NDSC website at http://www.ndsc.ie

Since the publication of the last version of these guidelines in 1999 there have been a number of changes to the recommended childhood immunisation schedule:

- Immunisation against serogroup C meningococcal disease is now recommended at 2, 4 and 6 months of age as part of the primary immunisation schedule.
- The oral polio vaccine (OPV) has been replaced by inactivated polio vaccine (IPV) in the primary immunisation schedule.
- A 5-in-1 vaccine which contains diphtheria, pertussis, tetanus and polio components mixed with Hib is now available in Ireland.
- A Td booster is now recommended for those aged between 12 and 14 years rather than at school leaving age.
- MMR immunisation is now recommended at 12-15 months of age instead of at 15 months as before.

Salmonella Monthly Report (August 2002):

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, INSRL.

Health Board	E	M	MW	NE	NW	SE	S	W	Total
S.Typhimurium	2	2	2	1	1	4	0	2	14
S.Enteritidis	8	0	4	1	0	1	4	4	22
S.Hadar	1	0	0	0	0	0	0	0	1
S. Java	0	0	0	0	1	0	0	0	1
S. Muenster	0	0	0	0	0	0	0	1	1
S. Newport	0	0	0	0	0	0	0	1	1
S. Ohio	1	1	0	0	0	0	0	0	2
S. Senftenberg	0	0	0	1	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.Virchow	1	0	0	0	0	0	0	0	1
Total	**14**	**3**	**6**	**3**	**2**	**6**	**4**	**8**	**46**

*case associated with travel in India