EPI-INSIGHT

IONAD NAISIUNTA FAIRE GALAIR

DISEASE SURVEILLANCE REPORT OF NDSC, IRELAND

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IN THE NEWS!

Viral Gastroenteritis

Last month, a seminar on Foodborne Viruses was organised by the Food Safety Authority (FSAI). Data compiled by FSAI on outbreaks of infectious intestinal disease in Ireland show that between 1998 and 2000, outbreaks caused by norwalk-like virus (SRSV) or unknown aetiology have steadily increased in number (accounting for 20/44 all outbreaks reported to the authority in the past 18 months). Dr Maureen Lynch, Centers for Disease Control & Prevention (CDC), US, spoke on the nomenclature of enteric viruses and described outbreaks of foodborne viruses in the US especially those due to Norwalk-Like viruses (NLV). Vomiting was highlighted as being a very effective means of transmission because of the high numbers of viruses dispersed. The National Virus Reference Laboratory described the current methods used to diagnose foodborne viruses including the electron microscope but these are insufficient to fully identify viruses. Three Specialists in Public Health Medicine presented results of outbreak investigations - a large hotel, an institution for people with intellectual disability and a tour group. The modes of transmission of these viruses can start off as foodborne and become person to person through aerosol and environmental contamination. Dr John Morgan (UCC), looked at the molecular detection and characterisation of specific viruses in a recent research project. Ongoing work is occurring in this area of sensitive PCR (polymerase chain reaction) methods which will increase our ability to pick up viruses in both human and food samples. The seminar highlighted the importance of ongoing surveillance and reporting, the need for funding in the area of molecular epidemiology, the importance of working with food industry to ensure adequate hand washing facilities, the need to comply with regulations about staff training and supervision and the importance of developing a specific viral gastroenteritis reference laboratory. CDC published "Recommendations for Public Health Consequences and Outbreak Management for Norwalk- Like Viruses"' in the Weekly Morbidity and Mortality Report (MMWR) of 1st June 2001. This is also available on the CDC website http://www.cdc.gov/mmwr/ **Dr M Fitzgerald, FSAI**

US report rejects MMR vaccine and Autism Spectrum Disorders (ASD) link

A new report from the Institute of Medicine (IOM) in the United States (April 2001) has rejected an association between autism and childhood immunisation with MMR. The committee concluded that a consistent body of epidemiological evidence shows no association at the population level between MMR vaccine and autism spectrum disorders (ASD). The IOM therefore does not recommend a policy review of licensure of MMR vaccine or of the current schedule and recommendations for administration of MMR vaccine. The IOM report supports the recent statement made in January 2001 by WHO. WHO strongly endorses the use of MMR (measles, mumps and rubella) vaccine on the grounds of its convincing record of safety and efficacy. There has been no new scientific evidence that would suggest impaired safety of MMR. On the contrary, all results from vaccine trials published reaffirm the high safety and efficacy of MMR vaccine. WHO has noted that other scientists have not been able to reproduce the results claimed by Dr Wakefield and his team regarding measles virus in the gut. His published observations regarding the onset of autism following administration of MMR vaccine do not meet the scientific criteria required to suggest that the vaccine is the cause (of autism).

Haemolytic Uraemic Syndrome and non-O157 VTEC

In September 2000, a 10-month-old girl was admitted to a paediatric hospital in Dublin with a history of vomiting and diarrhoea (non-bloody), later diagnosed with haemolytic uraemic syndrome (HUS). Haemodialysis and supportive therapy was commenced and the child made a full recovery. Microbiological investigations at Cherry Orchard Hospital revealed stool results for *E. coli* O157 to be negative, but five immediate and extended family contacts were positive for *E. coli* O26 (verocytotoxin 1 and 2 positive). The index case was negative for both serotypes. Verocytotoxin producing *E. coli* (VTEC) is a significant cause of gastro-enteritis and HUS. While *E. coli* O157 is one well-recognised serotype associated with this condition, there are others such as O26. This case is noteworthy in that it highlights issues relating to the safe, laboratory detection of non-O157 VTEC in clinical cases of HUS and consequently the risk assessment applied to VTEC cases and contacts of cases, and the public health management of non-O157 *E. coli* infections. The standardisation of investigation, notification and management of non-O157 *E. coli* infections will assist in estimating the true burden of such infections in Ireland. **Dr E McNamara and Dr G Sayers, Eastern Regional Health Authority.**

VTEC O157 in Ireland.

Introduction

Verocytotoxin producing *Escherichia coli (VTEC),* of which *E coli* O157:H7 is the most common member, is a serious global public health concern. VTEC produces toxins that can lead to symptoms of non-bloody diarrhoea, haemorrhagic colitis, haemolytic uraemic syndrome (HUS) and thrombotic thrombocytopenic purpura (TTP). In some cases, it can lead to death.

Methods

Since 1999, microbiologists, specialists in public health medicine and area medical officers have participated in an epidemiological surveillance system for VTEC O157:H7 whereby a standard dataset of information is collected on each case identified, and reported to the National Disease Surveillance Centre. 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.

The case definitions used in this system are as follows:

Suspected: A case of post-diarrhoeal HUS or TTP.

Probable: A case with isolation of *E coli* O157 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* 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 had been international travel within two weeks prior to onset of illness. All cases reported by end March 2001, with date of onset of symptoms, or identification during 2000, were included in the analysis.

Results

In 2000, 41 cases of VTEC O157 were notified to NDSC. Six of these cases occurred in non-Irish residents, and therefore were not included in the estimation of population-based rates. These six cases are however included in the descriptive epidemiology.

Table 1 shows the incidence of VTEC O157 in Ireland over the past 5 years.

Table 1: Number of cases of VTEC O157 and crude incidence rate [95% CI] in Ireland, 1996-2000

Year	1996	1997	1998	1999	2000
Cases	8	31	76	51	35 (41*)
CIR [95% CI]	0.2 [0.1-0.4]	0.8 [0.5-1.2]	2.1 [1.6-2.6]	1.4 [1.0-1.8]	1.0 [0.6-1.3]

CIR = Crude Incidence Rate / 100,000 population, CI = Confidence Interval

** 41 cases notified, but 6 occurred in non-Irish residents*

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

In 2000 and in 1999, the crude incidence rates and age standardised incidence rates varied by health board, but the differences were not statistically significant.

Table 2: Crude incidence rate and age standardised incidence rate by health board, Ireland, 1999-2000.

		Health Board								
		ERHA	M	MW	NW	SE	S	W	NE	Total
2000	CIR	0.5	3.4	0.6	0.5	1.5	0.4	2.8	0	1.0
	ASIR	0.5	3.3	0.6	0.4	1.5	0.4	2.9	0	
1999	CIR	0.7	4.4	3.8	0.9	1.5	1.6	0.6	0	1.4
	ASIR	0.7	5.6	3.9	1.0	1.5	1.7	0.5	0	

CIR = Crude Incidence Rate, ASIR = Age Standardised Incidence Rate / 100,000 population

Twenty-two (53.7%) cases occurred in females and 19 (46.3%) occurred in males. Most cases occurred in young children in the 1-4 year age group. Looking at the age specific incidence rate in cases in Irish residents, the age group at highest risk was the 0-4 year olds (Figure 1).

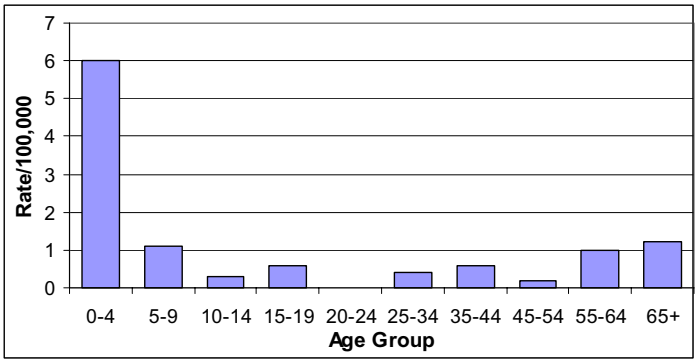

Figure 1: Age specific incidence rate of VTEC O157 in Irish residents, 2000.

There were two seasonal peaks in occurrence of cases, in March and in September. Eight (19.5%) cases were travel associated, and 33 (80.5%) were not travel associated. The countries visited within 14 days of onset of illness were UK (3), Spain(3), and Canada (2).

Clinical features:

In total, 40 cases (98%) had symptoms, and only one case was asymptomatic. Reported symptoms included bloody diarrhoea in 26 (63%) cases, and haemolytic uraemic syndrome in 5 cases (12%). The five cases of HUS occurred in persons ranging in age from 2 to 17 years. Three were female and two were male. All these cases reported bloody diarrhoea. Four of the cases with HUS recovered from their illness. One person died from HUS in 2000. This case occurred in a male in the 5 to 9 year age group, and was associated with travel to Spain. The phage type in this case was PT4.

Microbiological investigation:

One case of VTEC was identified on serology alone. This case was included as a case, as there were typical clinical features, and the case developed HUS. Following investigation of a travel associated case in Spain in a 17-year-old female, VTEC O157 was isolated from frozen hamburger samples taken from a restaurant where this case had eaten. Diagnosis of VTEC in this case had been made using serology only, and no isolate was available for genetic testing and investigation of a possible link. No other food or water sample was linked microbiologically to a case of VTEC in 2000.

Limited information was available nationally on test results from water sampling. In five cases, there was documented contamination of

the water supply with coliforms and with *E coli*. In no case was *E coli* O157 detected in water.

Phage typing of isolates/strains showed that the majority of cases were PT 32. The pattern of phage types found in travel-associated cases was different to non-travel associated cases (Table 3).

Table 3: Phage type, association with international travel and countries visited within 14 days of onset of illness, for cases of E coli *O157:H7, Ireland, 2000 (n=41).*

Phage Type	Not travel associated	Travel associated	Countries	Total
14	0	2	Canada (2)	2
2	1	0		1
21	1	0		1
21/28	0	2	U.K. (2)	2
31	1	0		1
32	24	2	Spain (1) U.K. (1)	26
38	1	0		1
39	1	0		1
4	0	2	Spain (2)	2
8	1	0		1
Unavailable	3	0		3

This phage type pattern was different to that found in Ireland in 1999, where only two different phage types were detected, PT32 in 66.7% and PT21/28 in 33.3%.

Epidemiological investigation:

On active investigation of some of the cases identified in 2000, further previously undiagnosed cases of VTEC were identified. Of 35 cases with this information, 8 cases (33%) occurred in association with other cases. Twenty seven cases (74%) were sporadic. Three family outbreaks of VTEC O157 were detected. There was no generalised outbreak of *E coli* O157:H7 detected in 2000. As a result no food item was linked epidemiologically to VTEC.

Of 27 cases where information was collected on the consumption patterns of unpasteurised cheese and/or milk, three cases (3/27) reported this exposure. Fifteen cases (50%) reported exposure to farm animals (n=30). Information on the source of the water supply was available in 31 cases. Of these, the water supply was public in 14 cases (45%), well water in 10 (32%), and from a group water scheme in 7 cases (23%).

Information on whether the case attended a crèche, or was an in-patient in a nursing home, hospital or in another institutionalised setting, was also gathered. Of 33 cases where information was available, 3 attended a crèche. Two patients were in-patients in hospital with other conditions when VTEC O157 was detected. Following investigation, no further cases were detected in these hospitals. Twenty-seven cases were not in a high-risk category.

Non-O157 VTEC:

In 2000, all cases of non-O157 VTEC reported to NDSC occurred in the Eastern Regional Health Authority (ERHA). In September 2000, a case of HUS in a child with a history of diarrhoea was notified to the Department of Public Health in the Eastern Regional Health Authority. Stool samples were negative for *E coli* O157 and other non-O157 VTEC. However, five siblings and cousins of the case with HUS provided specimens from which *E coli* O26, verocytotoxin positive, was identified.

Discussion

Each case of VTEC identified is investigated thoroughly. Family and other at risk contacts are screened according to PHLS guidelines.[1] This means that cases with mild symptoms, which would otherwise not come to medical attention, are identified, and are reported. By systematically collating information on each case identified, the epidemiology of VTEC in Ireland is emerging. It is clear that young children are most at risk of disease, and given the potential for rapid spread in crèches, prompt action is taken when a case is identified, as well as efforts at primary prevention, through education of parents and staff.

The three main ways in which VTEC O157 is transmitted are via contaminated food or water, by person-to-person spread, or through direct contact with farm animals. The descriptive epidemiology of VTEC in Ireland is identifying significant exposures to farm animals. Those who visit farms should be made aware of the risks and all those who are in contact with farm animals should have access to adequate hand washing facilities for use after being in contact with them.

Proper cooking of meat will kill the organism, and as good weather approaches and the barbeque season begins, the important message is to cook meat until the juices run clear, and the meat is brown throughout.

The majority of cases of VTEC in 2000 occurred in persons whose source of water was not from a public water supply. In five cases notified to NDSC, water quality around the time of identification of illness in the index case was not adequate. It is important that the public has access to a clean water source, as contaminated water has been implicated as the source of large outbreaks of VTEC internationally.

The lack of a national reference laboratory for confirmation of toxin production and definitive typing of VTEC in Ireland has been a cause for concern. Ireland should be in a position to rapidly investigate any possible cause of this serious and potentially fatal illness, rather than have to refer isolates outside the country. In this regard, the Eastern Regional Health Authority Public Health Laboratory has just opened a containment level 3 laboratory for diagnosis of VTEC infection and confirmation of toxin status. This facility is available to the ERHA, the North Eastern Health Board, and other health boards who wish to avail of the services.

The emergence of outbreaks of non-O157 VTEC in Ireland highlights the importance of improving national surveillance of non-O157 VTEC. As was seen in 2000, non-O157 VTEC can be associated with serious illness. **Dr Derval Igoe, NDSC**

Acknowledgements: The writer would like to acknowledge the cooperation of microbiologists, medical laboratory scientists, SAMOs, AMOs, SPHMs, PEHOs and EHOs for participating in the enhanced surveillance system.

References:

1. PHLS Advisory Committee on Gastrointestinal infection with Verocytotoxin producing Escherichia coli (VTEC). *Communicable Disease and Public Health* 2000; **3** (1): 14-23.

Pneumococcal Meningitis in Ireland

Streptococcus pneumoniae is a bacterial pathogen that affects children and adults worldwide. Those at greatest risk of serious pneumococcal infection and death are the very young, the elderly and the immunocompromised. The organism colonises the upper respiratory tract and can cause: (a) disseminated invasive infections such as meningitis and septicaemia, (b) pneumonia and other lower respiratory tract infections and (c) upper respiratory tract infections such as otitis media and sinusitis. In the UK, approximately 20% and 22% of people who have septicaemia and meningitis, respectively, die from their infection.[1]

This report will focus on the cases of pneumococcal meningitis reported in Ireland since 1997 through the enhanced surveillance system for bacterial meningitis, (i.e. cases that were notified to the Departments of Public Health). Population data were taken from 1996 census. Between 1997 and 2000, 94 cases of pneumococcal meningitis were reported. The mean number of cases reported per year was 24, equivalent to a crude incidence rate of 0.65/100,000. The annual crude incidence rate ranged from 0.83/100,000 in 1997 to 0.52/100,000 in 1999. Over this four-year period there were 12 deaths, which is equivalent to a case fatality rate (CFR) of 12.8%. Thus, the case fatality rate for pneumococcal meningitis tends to be much higher than that for meningococcal disease (3-6% in Ireland). In the first five months of 2001, 8 cases of pneumococcal meningitis have been reported with 2 deaths (CFR, 25%). The number of cases and case fatality rate for 1997-2001 are presented in Figure 1.

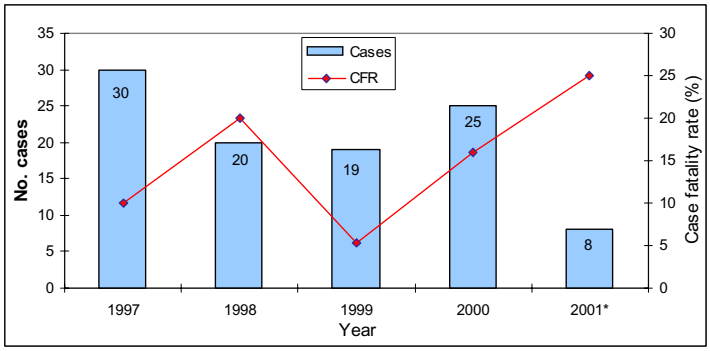

*Figure 1. Number of cases and case fatality rate of pneumococcal meningitis reported in Ireland since 1997, *to 31/05/2001*

Case based information on pneumococcal meningitis is available at national level only since 1999 and therefore analysis by age and sex in this report is based on the 52 cases reported between January 1999 and May 2001. Incidence rates were highest in young children (Table 1). Forty-six percent (24/52) of the cases reported occurred in children less than 5 years of age. The male: female ratio was 1.2:1. Four of the seven deaths (57%) reported in this period occurred in children less than five years of age.

*Table 1. Pneumococcal meningitis cases notified by age group 1999-2001, *to 31/05/2001*

Age Group	No. cases (No. Deaths)			Rate per 100,000		
	1999	2000	2001*	1999	2000	2001*
<1 Year	4 (0)	10 (0)	0 (0)	8.2	20.5	0.0
1-4	3 (0)	4 (2)	3 (2)	1.5	2.0	1.5
5-9	0 (0)	1 (1)	0 (0)	0.0	0.3	0.0
10-14	0 (0)	0 (0)	0 (0)	0.0	0.0	0.0
15-19	2 (0)	1 (0)	1 (0)	0.6	0.3	0.3
20-24	1 (0)	0 (0)	0 (0)	0.3	0.0	0.0
>24	9 (1)	8 (0)	4 (0)	0.4	0.4	0.2
Unknown	0 (0)	1 (0)	0 (0)			
Total	19 (1)	25 (4)	8 (2)	0.5	0.7	0.2

Isolates of antibiotic-resistant *S. pneumoniae* have become increasingly common throughout the world. Based on information collated at NDSC for the European Antimicrobial Resistance Surveillance Project (EARSS) 18% and 13% of *S. pneumoniae* isolates from either blood or CSF were resistant to penicillin in 1999 and 2000, respectively.[2]

Efforts to develop effective pneumococcal vaccines have been ongoing. A 23-valent-polysaccharide vaccine (Pneumovax II) has been available in Ireland since 1985. The vaccine is recommended for use in persons aged 65 years and over. It should also be given to those over two years of age who are at increased risk of pneumococcal disease as outlined in the Immunisation Guidelines for Ireland.[3] A conjugate pneumococcal vaccine (Prevenar) has recently been licensed for use across the EU, and unlike non-conjugated polysaccharide vaccines, is suitable for use in the very young as it elicits an immune response in children less than two years of age. This vaccine contains seven serotypes of *S. pneumoniae*, which account for 71-86% of invasive pneumococcal disease affecting young children. The Royal College of Physicians of Ireland ImmunisationAdvisory Committee is currently considering the recommendations regarding the use of this vaccine in Ireland.

References:

1. Pneumococcal disease.http://www.phls.co.uk/seasonal/pneumococcal/pneumo01.htm
2. EARSS reports. http://ndsc.ie/publications
3. Immunisation Guidelines for Ireland – National Immunisation Committee of the Royal College of Physicians of Ireland. 1999.

Dr Margaret Fitzgerald & Dr Darina O'Flanagan, NDSC.

Erratum: Enhanced Surveillance of Syphilis

In the June issue of EPI-INSIGHT it was stated that 106 (97.2%) of the cases of primary and secondary syphilis, which were notified through the enhanced syphilis surveillance system, were asociated with the outbreak of syphilis in Dublin. This was incorrect. Eighty-five (78%) of the cases reported through the enhanced surveillance system met the outbreak case definition.

Salmonella Monthly Report (May 2001):

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	0	1	1	0	2	0	6	0	10
S.Enteritidis	6	1	2	0	3	0	3	1	16
S.Brandenburg	0	0	1	0	0	0	0	0	1
S.Bredeney	0	0	0	0	0	0	1	0	1
S.Heidelberg	1	0	0	0	0	0	0	0	1
S.Othmarschen	1	0	0	0	0	0	0	0	1
S.Putten	1	0	0	0	0	0	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	11	2	4	0	5	0	10	1	33

*Case recently arrived from India, detected in blood culture.