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HIV and AIDS in Ireland, to end 2005

Background

During 2005, an estimated 4.1 million people worldwide became newly infected with HIV and an estimated 2.8 million lost their lives to AIDS.[1] HIV infection remains a disease of major public health importance in the WHO European region. Timely and complete HIV surveillance data are essential to accurately monitor trends in the epidemic. Data on HIV and AIDS in Ireland are obtained from the national HIV case based reporting system, a voluntary anonymised surveillance system.

HIV infections, to end of 2005

By the end of 2005, 4,082 diagnoses of HIV were reported in Ireland. The number of newly diagnosed HIV infections increased considerably from 120 cases in 1998 to a peak of 399 cases in 2003. This decreased to 356 cases in 2004 and 318 cases in 2005. While these data indicate a downward trend, they should be interpreted with caution as they do not represent HIV incidence and are dependent on uptake of HIV testing. As the presence of an STI facilitates the transmission and acquisition of HIV, the ongoing increase in annual notifications of STIs (from 2,588 in 1994 to 10,695 in 2004) is of concern.[2, 3]

Figure 1 shows newly diagnosed HIV cases from 1994 to 2005 by probable route of transmission for the three most frequent routes, namely, heterosexual contact (HC), men who have sex with men (MSM), and injecting drug users (IDUs). Information on risk group was unavailable for 28 (8.8%) of the cases newly diagnosed in 2005.

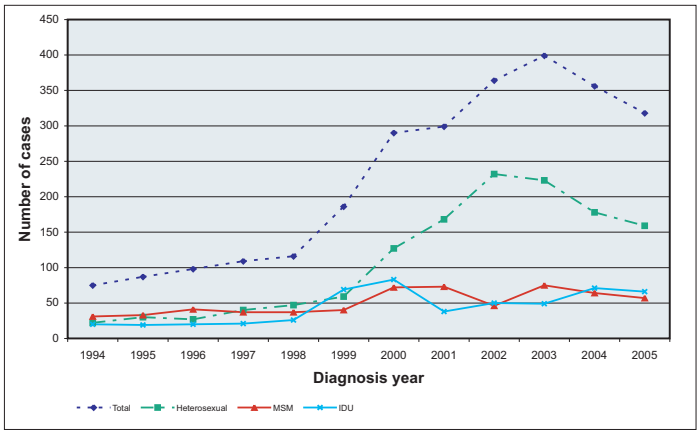

Figure 1. Annual number of HIV infections, 1994 to 2005

Heterosexual contact

The drop in the number of newly diagnosed HIV cases is due predominantly to a decrease in the number of heterosexually acquired cases, from a peak of 232 in 2002 to 159 in 2005. This is largely due to a decrease in heterosexually acquired cases among people born in sub-Saharan Africa (SSA) from 177 cases in 2002 to 101 in 2005. This may reflect the decrease in the number of asylum seeker applications between 2002 and 2005 (from 11,634 to 4,323), with possibly fewer cases being detected through the asylum seeker screening programme. However, it is important to remember that people coming to Ireland from SSA do not form a homogeneous group and include students, immigrant workers, refugees, economic migrants, asylum seekers and others. The number of new diagnoses among heterosexuals born in Ireland remained steady between 2002 and 2005 with an average of 30 cases per year. Currently, HC is the most frequent mode of transmission in most countries in western Europe.[4]

Of the 159 heterosexual cases in 2005, there were 91 females and 68 males. The mean age was 33.4 years. Seventeen (10.7%) of the 159 heterosexual cases diagnosed in 2005 were diagnosed late i.e. diagnosed with AIDS at the time of HIV diagnosis. Diagnosing HIV as soon as possible is vital for both the individual and the community and provides an opportunity for early intervention and treatment.

Men who have sex with men

There were 57 new diagnoses among MSM during 2005, a decrease from the number diagnosed in 2004 (64 cases) and 2003 (75 cases). However, MSM continue to be a population at high risk for HIV infection and worryingly the number of HIV cases reported among MSM in most western European countries increased between 2000 and 2004.[4] The mean age at HIV diagnosis in MSM in 2005 was 37.1 years. Of the 57 cases diagnosed in 2005, 37 (64.9%) were born in Ireland and 7 (12.3%) in western Europe. Five (8.8%) of the 57 cases in MSM were diagnosed late.

Injecting drug use

There were 66 new diagnoses among IDUs during 2005. There was a considerable jump in the number of cases in IDUs between 1998 and 1999 (from 26 to 69) with an average number of 60 cases per year since then. Of the 66 cases, 55 (83.3%) were born in Ireland, 37 were male, 29 were female and the mean age at HIV diagnosis was 30.5 years. Four (6.2%) of the 66 cases in IDUs were diagnosed late.

Mother to child transmission

There were three cases of mother-to-child transmission (MCT) diagnosed in children in 2005. Two children were born in SSA and one was born in Ireland. In this case, the mother was presumed to have been infected in SSA. In all three, the mother was diagnosed after the birth of the child. In addition, there were 105 babies born to a HIV infected mother during 2005; 90 are not infected and 15 remain of indeterminate status (i.e. do not meet the criteria for HIV infection and are <18 months at time of test).

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Epidemiology of Verotoxigenic *E. coli* in Ireland, 2005

Introduction

Verotoxigenic *E. coli* (VTEC) are so-called because of their ability to produce one or both of two verotoxins (VT1 and VT2). They are an important cause of gastroenteric illness because of the severity of illness they can cause and the requirement for prompt public health action to prevent further transmission. About 9% of cases develop haemolytic uraemic syndrome (HUS), a life-threatening complication. *E. coli* O157 was the first *E. coli* serogroup to be associated with this distinctive illness. Additional VT-producing serogroups frequently reported include O26, O111, O103 and O145. Infection can be transmitted through food, contaminated water, the environment and by direct contact with animal carriers. Person-to-person spread is an important mode of transmission in households, child-care facilities and institutions.

Data sources and methods

Enhanced information on notified cases of VTEC was supplied by HSE personnel and typing data were provided by the Public Health Laboratory, HSE Dublin Mid Leinster at Cherry Orchard Hospital which offers specialist diagnostic and typing services for VTEC. Although not notifiable, clinicians were also requested to report suspected cases of VTEC, i.e. cases of HUS or TTP of possible infective aetiology, for which there was no laboratory or epidemiological evidence of VTEC infection.

Results

In 2005, 125 confirmed cases of VTEC were notified to HPSC, a crude incidence rate (CIR) of 3.2 per 100,000 (table 1). There were 108 cases of VTEC O157 (2.8/100,000), 12 VTEC O26, two VTEC O ungroupable, and one each of VTEC O152, O21 and O123. In addition, five HUS cases were reported as suspected VTEC cases which are not included in the following analyses.

Table 1. No. and CIR of confirmed VTEC O157 and VTEC infection, 2001-2005

Year	No. VTEC O157 (95% CI)	CIR VTEC O157*	No. VTEC ‡	CIR VTEC* (95% CI)
2001	52	1.3 (0.9-1.6)	N/A	N/A
2002	70	1.7 (1.3-2.2)	N/A	N/A
2003	88	2.2 (1.8-2.7)	95	2.4 (1.9-2.9)
2004	52	1.3 (1.0-1.7)	61	1.6 (1.2-2.0)
2005	108	2.8 (2.3-3.3)	125	3.2 (2.6-3.8)

* Data from the 2002 census were used to calculate rates
‡ Includes serogroup O157

Regional and seasonal distribution

Regional variation was noted in the numbers of cases reported (table 2), with the highest incidence rates in HSE MW and HSE M. A single outbreak was largely responsible for the atypically high incidence in the MW,[1] while three small family outbreaks accounted for 8/12 cases in HSE M. In HSE ER in 2005, the number of VTEC cases was almost 3-fold higher than reported in previous years (35 cases in 2005 versus 12 in each year 2002-2004).[2] Seven of these cases were non-O157 VTEC. Non-O157 VTEC cases were widely distributed throughout the country with cases reported from 7 of the 8 HSE areas. Large numbers of VTEC cases were notified in quarter 3, and atypically also in quarter 4, in particular in November (table 2).

Table 2. No. of confirmed VTEC cases by quarter and HSE area, CIR and ASIR by HSE area, 2005

Quarter	E	M	MW	NE	NW	SE	S	W	Total
Q1	2	1	0	0	0	1	1	1	6
Q2	5	1	1	1	3	3	2	3	19
Q3	15	7	4	2	2	10	6	4	50
Q4	13	3	21	4	0	2	1	6	50
Total	35	12	26	7	5	16	10	14	125
CIR	2.5	5.3	7.7	2.0	2.3	3.8	1.7	3.7	3.2
(95% CI)	(1.7-3.3)	(2.3-8.3)	(4.8-10.6)	(0.5-3.5)	(0.3-4.3)	(1.9-5.7)	(0.6-2.8)	(1.8-5.6)	(2.6-3.8)
ASIR	2.5	5.0	7.7	2.0	2.2	3.7	1.7	3.7	-
(95% CI)	(1.7-3.4)	(2.2-7.8)	(4.7-10.6)	(0.5-3.6)	(0.3-4.1)	(1.9-5.5)	(0.7-2.8)	(1.7-5.6)	

Table 3. Confirmed VTEC cases by method of laboratory confirmation, 2005

	HUS	Non-HUS	Total
Isolation of NSF VTEC O157	9	94	103
Isolation of SF VTEC O157	2	1	3
Serodiagnosed as *E. coli* O157	2	0	2
Isolation of non-O157 VTEC	4	13	17
Total	**17**	**108**	**125**

Age-sex distribution

The highest incidence was recorded in young children, which is consistent with previous years. There were similar numbers of male (n=65) and female (n=59) cases. As in 2004, a higher proportion of VTEC infections notified in persons less than 5 years were due to non-O157 VTEC than for other older groups, possibly reflecting the likelihood that children less than 5 years are tested for non-O157 VTEC more often than older patients.

Clinical features

Information on symptoms was available for 117 cases, of whom 87 (74%) were reported as symptomatic. Reported symptoms included bloody diarrhoea in 53 cases, and HUS in 17 cases. HUS cases ranged from 8 months to 68 years and, as in previous years, a higher proportion of paediatric (13/70) than adult (4/55) cases developed HUS. Notably, four HUS cases were caused by non-O157 VTEC (three VTEC O26 and one VTEC O21 case).

Microbiology

Among the 108 VTEC O157 infections reported, typical non-sorbitol fermenting (NSF) VTEC O157 were isolated from 103 cases, sorbitol- fermenting (SF) VTEC O157 from three cases, and two confirmed *E. coli* O157 cases were diagnosed by serodiagnosis alone. All 17 non-O157 VTEC cases were culture confirmed (table 3).

There were 106 VTEC O157 isolates referred to the PHL HSE Dublin Mid Leinster. As in previous years, PT32 was the commonest phage type reported (n=59), accounting for 56% of the VTEC O157 reported. There were also 13 PT21/28, 12 PT8, 6 PT31, 4 each PT4 and PT14, 3 PT88 and one each PT1, RDNC, PT51, PT49 and PT54 isolates.

In 2005, 89% of VTEC O157 strains carried the genes for VT2 only, while 11% carried the genes for both VT1 and VT2 (table 4). In contrast, 41% of non-O157 VTEC isolates carried the genes for VT1 only, 12% for VT2 only, and 47% VT1 and VT2.

Outbreak investigations

In 2005, 19 outbreaks were reported, comprising 65/125 confirmed cases

Table 4. Verotoxin typing results for VTEC isolates referred to the PHL HSE Dublin Mid Leinster, 2005

Serogroup	VT1 only	VT2 only	VT1 and VT2	Total
O157	0	94	12	106
O26	4	0	8	12
O21	0	1	0	1
O123	1	0	0	1
O152	1	0	0	1
O ungroupable	1	1	0	2

Note that two *E. coli* O157 infections were diagnosed by serodiagnosis and thus isolates were not available for typing.

Table 5. VTEC outbreaks by suspected mode of transmission, 2005

Suspected mode of transmission*	No. of outbreaks	No. of confirmed cases	No. ill
P-P	4	12	7
P-P and animal contact	2	4	6
P-P and foodborne	2	4	4
Foodborne	2	6	3
P-P and waterborne	1	3	2
P-P, waterborne and animal contact	1	18	9
Foodborne and animal contact	1	2	2
Unknown/not specified	6	16	17
Total	**19**	**65**	**50**

*P-P denotes person-to-person transmission

reported (four general outbreaks and 15 family outbreaks). Seventeen were due to VTEC O157 and two to VTEC O26. The suspected modes of transmission reported are listed in table 5.

The largest VTEC O157 outbreak in Ireland to date occurred in the MW in October/November 2005.[1] Nine people were reported ill, including 2 children who developed HUS. A further nine asymptomatic contacts were confirmed as being infected with the outbreak strain and two persons with non-O157 VTEC strains. All cases recovered. No food or water samples tested positive for VTEC, but results from a case-control study indicated that potential exposure to drinking water from a local private group water scheme (GWS) was a risk. The implicated GWS drew water from areas of agricultural land with close proximity to cattle and slurry spreading. VTEC O157 indistinguishable from the outbreak strain was isolated from an animal/farm sample.

Discussion

In 2005, 125 confirmed cases of VTEC were notified to HPSC (CIR 3.2 per 100,000). This is 32% higher than the number reported in 2003 (the highest year prior to this) and is over twice the number reported in 2004.[2] Non-O157 VTEC have been recognised for many years in continental Europe as causing a significant proportion of VTEC infections, notably in Germany and Denmark.[3] The rise in the reported incidence of non-O157 infection in Ireland may be due to increased awareness of non-O157 VTEC and improved diagnosis and reporting.

The seasonal distribution of cases was unusual in 2005, with an atypically high number of cases in quarter 4. This was due in part to a single large outbreak that occurred in the MW at this time, and also to the large number of VTEC O157 cases that were notified in the HSE ER in November. Three family outbreaks accounted for ten of the 13 ER cases. The existence of one large undetected outbreak in the ER at this time is unlikely as, in all, 5 different phage types were represented among the 13 cases reported.

For the first time in Ireland, cases of VTEC O157 due to sorbitol-fermenting VTEC O157 were reported. There were three cases, two of which were epidemiologically linked and were foreign travel-associated. Typically, most VTEC O157 are unable to ferment sorbitol, and it is this feature that facilitates their identification. Human infections due to sorbitol-fermenting VTEC O157 strains have been reported from Germany and the Czech Republic and most recently in the UK.[4]

In 2005, high numbers of VTEC-confirmed HUS cases were reported – 17 HUS cases versus 4-6 per annum in the years 2001-2004. Eight of the 17 HUS cases notified in 2005 were diagnosed as VTEC either by serodiagnosis alone (n=2), by investigation for non-O157 VTEC (n=4) or by investigation for SF VTEC O157 (n=2), and would not have been recognised as VTEC had they been examined solely for the typical NSF VTEC O157. This demonstrates the benefits of thorough microbiological investigation of HUS cases.

A variety of sources and transmission routes have been demonstrated worldwide for VTEC, including food, water, environmental and direct animal contact as well as person-to-person transmission. For the VTEC outbreaks reported in Ireland 2005, multiple possible transmission routes were reported for many of the outbreaks, with person-to-person transmission suspected to have played a role in ten, food in five, water in two, and animal contact in three outbreaks. For most of the outbreaks, the evidence for these transmission routes was circumstantial, but for the large outbreak in the HSE MW, there was epidemiological evidence both for person-to-person transmission and for waterborne spread. This re-enforces the concerns raised in the 2004 HPSC VTEC annual report in relation to the proper management of private water supplies (both private wells and private group schemes), especially those that have the potential to serve large numbers of people.[2]

In February 2006, the HPSC sub-committee on VTEC published a document for health professionals on VTEC.[5] It provides guidance for clinicians, public health professionals, environmental health professional and infection control personnel in relation to VTEC. Further guidance for laboratory personnel is in preparation.

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References

1. Mannix M *et al*. Large *E. coli* O157 outbreak in Ireland, October-November 2005. *Euro Surveill* 2005; **10**(12): E051222.3.
2. Garvey P, McKeown P. Epidemiology of Verotoxigenic *E. coli* O157 in Ireland, 2004. *Epi-Insight* 2005; **6**(12). Available at www.ndsc.ie/hpsc/EPI-Insight/Volume62005/File,1413,en.PDF
3. EFSA 2004 Zoonoses Report. http://www.efsa.eu.int/science/monitoring_zoonoses/reports/1277_en.html
4. Editorial team. *E. coli* O157 infections in the UK. Euro Surveill 2006; **11**(6): E060601.2. http://www.eurosurveillance.org/ew/2006/060601.asp#2
5. Report of the HPSC Sub-Committee on Verotoxigenic *E. coli*. HPSC 2006. http://www.ndsc.ie/A-Z/Gastroenteric/VTEC/Guidance/

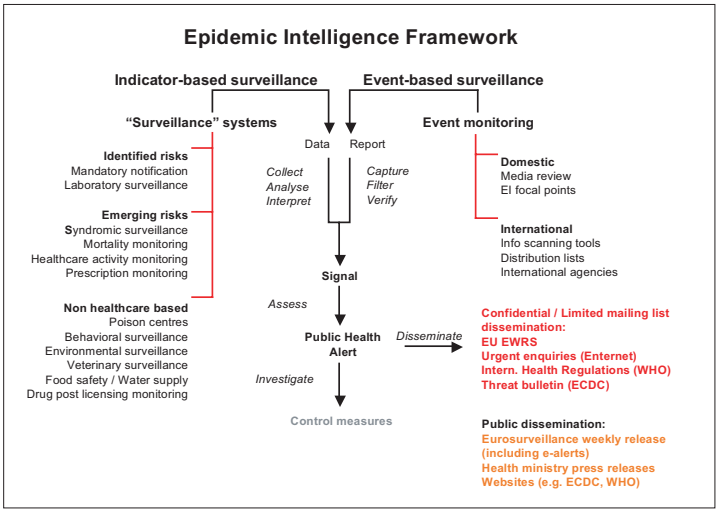
Epidemic Intelligence

'Epidemic intelligence' can be defined as all the activities related to early identification of potential health threats, their verification, assessment and investigation in order to recommend public health measures to control them.

Epidemic intelligence is being seen as increasingly important because of the need to rapidly recognise emerging international health threats such as SARS, or any clusters of human-to-human transmission of a new influenza virus with pandemic potential. The term 'epidemic intelligence' is not used in all European countries, and may cause confusion when translated into some languages. However, this term will be used until alternatives can be defined in each country and language.

National and regional disease surveillance systems provide information on potential threats by identifying abnormal events within the temporal distribution of known disease indicators routinely collected (number of cases, rates), and changes in laboratory characteristics of pathogens. New approaches are being used to improve the capacity of surveillance systems in detecting previously unknown threats, such as monitoring of syndromes (syndromic surveillance), death rates, health service use (such as emergency hospital admissions and drug prescriptions), behaviours, and exposure to risks related to the environment, food or animals.

More recently, surveillance institutions have been actively searching for information about health threats using internet scanning tools, email distribution lists or networks that complement the early warning function of routine surveillance systems.



Primary information can be reported by individuals, the media or information scanning tools [such as GPHIN (Global Public Health Intelligence Network), and the European Commission's Medical Information System, MedISys], and may be further processed and summarised by specific distribution lists or networks (such as ProMed-mail and the World Health Organization (WHO) Outbreak Verification List). While this approach has been successful in complementing surveillance systems for the detection of emerging threats at international level, few countries have developed standard operating procedures for epidemic intelligence or integrated these processes into their early warning activities. The revised international health regulations (IHR), once adopted, will also have an impact on epidemic intelligence activities because they require countries to strengthen and maintain capacity to detect, assess, notify and report events that may constitute a public health emergency of international concern. The European Centre for Disease Prevention and Control (ECDC) is collaborating closely with the WHO Regional Office for Europe on the integration of the revised IHR requirements into the alert notification process.

Improving epidemic intelligence in Europe

The ECDC is working with European national experts, the European Commission and the WHO to agree on a common Europe-wide terminology for epidemic intelligence needed for collaboration and harmonisation of methods, and a basic framework for the epidemic intelligence process that can be applied in all European countries (figure). The ECDC will support European countries by producing a weekly confidential communicable disease threat bulletin.

This framework, proposed by the ECDC and broadly accepted by the European experts, separates the evolving methods to identify previously unknown or emerging health threats from more traditional routine surveillance systems. Although there is generally overlap of these activities, it provides a useful reference for the general terms used in the epidemic intelligence process. All components of the framework, including the Europe-wide surveillance networks, are important contributors to the epidemic intelligence process.

This article is adapted from the original article: Kaiser R, Coulombier D, Baldari M, Morgan D, Paquet C. What is epidemic intelligence, and how is it being improved in Europe? *Euro Surveill* 2006; **11**(2): E060202.4. Available at www.eurosurveillance.org/ew/2006/060202.asp#4

HIV and AIDS in Ireland, to end 2005

AIDS cases and deaths, to end of 2005

A total of 876 AIDS cases, including 190 (21.7%) in females, have been reported to the end of 2005. Of the 876 AIDS cases, 390 (44.5%) are reported to have died. The total number of deaths in HIV infected individuals (with or without an AIDS diagnosis) reported to the end of 2005 is 431. It is important to note that there is considerable underreporting and late reporting of AIDS cases and deaths among HIV and AIDS cases.

More detailed HIV and AIDS reports are available on the HPSC website at www.ndsc.ie/hpsc/A-Z/HepatitisHIVAIDSandSTIs/HIVandAIDS/

K O'Donnell, HPSC

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References

1. UNAIDS. 2006 report on the global AIDS epidemic. Geneva 2006.
2. HPSC. Sexually Transmitted Infections 2004, Annual Summary Report. HPSC 2005.
3. Fleming DT, Wasserheit JN. From epidemiologic synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. *Sex Transm Infect* 1999; **48**: 773-777.
4. EuroHIV. HIV/AIDS surveillance in Europe: end-year report 2004. Saint-Maurice: Institut de Veille sanitaire, 2005. No 71.