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Disease Surveillance Report of HPSC, Ireland

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Contents

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Outbreak of Shigellosis in Irish Holidaymakers Associated with Travel to Egypt

An outbreak of gastrointestinal illness, associated with travel to Egypt, is being investigated. An airplane arrived in Dublin on 1st June 2005, carrying holidaymakers returning from Luxor in Egypt, many of whom were experiencing, or had recently experienced, significant gastrointestinal symptoms. The ill passengers were resident throughout the Republic of Ireland and Northern Ireland and a joint investigation involving public health, environmental health and microbiology professionals was undertaken.

Onset of illness was between 26th and 31st May. Two of the passengers have been diagnosed with *Shigella sonnei* infection. Further results are awaited. A study to determine the factors contributing to this outbreak is underway, and all passengers are being contacted to determine the extent of illness and to provide advice on hygiene and exclusion from school and work, particularly to those at heightened risk of onward transmission of illness. To date, 71 of 109 passengers interviewed (65%) have reported illness.

The Egyptian authorities were alerted and an alert was also sent through the EU's Early Warning and Response System (EWRS) on 10th June 2005 and through Enter-net (the international surveillance network for human gastrointestinal infections, http://www.hpa.org.uk/hpa/inter/enter-net_menu.htm) on 13th June 2005 to inform EU Member States and Enter-net participants of the situation and to determine if what was being observed in Ireland was part of a larger outbreak.

The tour operators who organised the travel have undertaken a review of the hygiene standards in locations for which they have responsibility in Luxor in order to prevent recurrence.

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Outbreak of Legionnaires' Disease in Norway

An outbreak of legionnaires' disease has been reported in southeast Norway. As of 8 June 2005, there have been 55 cases and 10 deaths. The mean age of the patients is 69 years. Sixty percent of cases are male and 40% are female. [1]

Investigations have indicated that an air scrubber (air polution control device) in a lignin processing plant is the source of the outbreak. The scrubber cleans particles in the air used in the production process by exposing it to a strong counterflow of water. The scrubber operates at 40°C and expels more than 4 cubic metres of water/hour as aerosol. The tank of the scrubber was routinely cleaned with high-pressure hot water every 3-4 weeks, but no disinfection was used. The pumps and pipes had not been manually cleaned.

In legionellosis outbreaks a risk assessment of air scrubbers regarding conditions facilitating *Legionella* growth (such as temperature and biofilm formation) should be carried out.

Reference
1. Nygard K. Update: outbreak of legionnaires' disease in Norway traced to air scrubber. *Eurosurveillance Wkly* [Serial online] 2005 [cited, 9 June 2005] **10**(6). Available at www.eurosurveillance.org/ew/2005/050609.asp#1

Zoonoses Report, Ireland 2002 and 2003

The Food Safety Authority of Ireland (FSAI) has recently published their second report on zoonoses in Ireland 2002 and 2003.[1] The report was compiled jointly by FSAI, the Department of Agriculture and Food and the Health Protection Surveillance Centre. The report is intended to provide a feedback mechanism to regulatory bodies and agencies and can be used to assess the effectiveness of control measures.

The trends in zoonoses were similar to those reported in 2000 and 2001. Campylobacteriosis was the most common bacterial zoonotic disease reported followed by salmonellosis and VTEC. Despite the control measures that are in place and extensive education campaigns, the peak incidence of zoonotic infections continues to be reported in the summer months when outdoor cooking is prevalent and consumption of pre-prepared and chilled foods is more common.

Reference
FSAI. Report on zoonoses in Ireland 2002 & 2003. FSAI 2005. Available at www.fsai.ie/publications/reports/Zoonoses_report2.pdf

Update from the European Antimicrobial Resistance Surveillance System in Ireland, 2004

Introduction

Prior to 1999 and the introduction of the European Antimicrobial Resistance Surveillance System (EARSS), there was no national surveillance of antimicrobial resistance (AMR) undertaken in Ireland, although some surveillance was carried out locally and regionally. EARSS was initially established and funded under the Directorate General for Health and Consumer Protection (DG-Sanco) of the European Commission in 1998 and is now partly funded by the Dutch Ministry of Health, Welfare and Sports. At the European level, EARSS is co-ordinated by the Dutch Institute for Public Health and the Environment (RIVM). EARSS has grown over the years and now consists of a network of 30 national surveillance systems, covering over 800 hospitals and over 100 million people. It aims to provide reliable and accurate data on antimicrobial resistance (AMR) on invasive isolates of five key pathogens:

- *Staphylococcus aureus* (SAU) from blood only
- *Streptococcus pneumoniae* (SPN) from blood or CSF
- *Escherichia coli* (ECO) from blood or CSF
- *Enterococcus faecalis* (EFA) from blood only
- *Enterococcus faecium* (EFM) from blood only.

EARSS is co-ordinated in Ireland by the Health Protection Surveillance Centre (HPSC) under the expert guidance of a Steering Group, which comprises microbiologists, epidemiologists and scientists. The number of laboratories reporting to EARSS has increased over the six years from 11 for *S. aureus* and 12 for *S. pneumoniae* in 1999 [with an estimated coverage of the Irish population of 42% and 49%, respectively, based on Acute Hospital Activity Data obtained from the Department of Health and Children (DoHC)] to 41 by the end of 2004 (with approximately 95% coverage). Surveillance of *E. coli*, *E. faecalis* and *E. faecium* commenced in January 2002.

Methods

EARSS collects routinely generated antimicrobial susceptibility data on "the first invasive isolate per patient per quarter" for each of the above pathogens. Some of the key antibiotics required for each pathogen by the EARSS protocol are as listed in table 1 (see http://www.earss.rivm.nl for the latest protocols). HPSC collects these data nationally on a quarterly basis. The collated national data are submitted to the EARSS Management Team at RIVM.

Results

S. aureus

In 2004, there were 1,323 reports of *S. aureus* bacteraemia, of which 41.8% were resistant to methicillin (methicillin-resistant *S. aureus*, MRSA). This represents a slight decrease on the proportions of MRSA observed in the previous two years (table 1).

The mean ages of patients with methicillin-sensitive *S. aureus* (MSSA) and MRSA bacteraemia were 51 and 67 years, respectively ($P < 0.0001$). The probability of acquiring MRSA bacteraemia as opposed to MSSA bacteraemia in patients aged 65 years or more was 1.9 times greater than in patients under 65 years (RR, 1.9; 95% confidence interval, 1.71-2.12). There were more isolates from males than females for both MSSA (60% vs 39%, $P < 0.0001$) and

Table 1. Summary of EARSS data by pathogen over the period 1999-2004 with total numbers of isolates reported and proportion (%) resistant to the key antibiotics

Year	1999	2000	2001	2002	2003	2004[1]
Laboratories*	12	19	20	23	28	41
S. aureus						
No. of isolates	510	639	815	1,042	1,140	1,323
Methicillin	38.8%	39.0%	41.3%	42.7%	42.1%	41.8%
S. pneumoniae						
No. of isolates	157	201	245	278	364	400
Penicillin	19.1%	12.9%	12.2%	11.5%	11.8%	10.3%
Erythromycin[2]	13.4%	12.0%	12.6%	12.7%	11.6%	14.2%
E. coli						
No. of isolates				741	991	1,256
3GC[2,3]				3.0%	2.4%	2.4%
Ciprofloxacin[2]				5.4%	9.5%	12.5%
Gentamicin[2]				2.7%	3.9%	5.7%
E. faecalis						
No. of isolates				168	218	242
Vancomycin[2]				2.4%	1.4%	1.3%
HLG[2,4]				39.2%	34.1%	42.2%
E. faecium						
No. of isolates				85	135	187
Vancomycin[2]				11.1%	19.4%	23.2%
HLG[2,4]				16.7%	54.7%	57.8%

* Number of laboratories participating in EARSS at year-end. It is important to note that the increasing numbers of isolates observed year on year are due to the increasing numbers of laboratories.
[1] 2004 data are provisional
[2] Not all isolates tested
[3] 3GC – 3rd generation cephalosporin (e.g. cefotaxime, ceftriaxone, ceftazidime)
[4] HLG – high-level gentamicin

MRSA (61% vs 37%, P <0.0001). The age and sex distribution for MRSA cases in 2004 is shown in figure 1.

Ireland has one of the highest proportions of MRSA in Europe (figure 2). Other countries reporting high proportions of MRSA in 2004 include the UK, Spain, Portugal and Greece. The lowest proportions of MRSA are still seen in the Netherlands and Nordic countries.

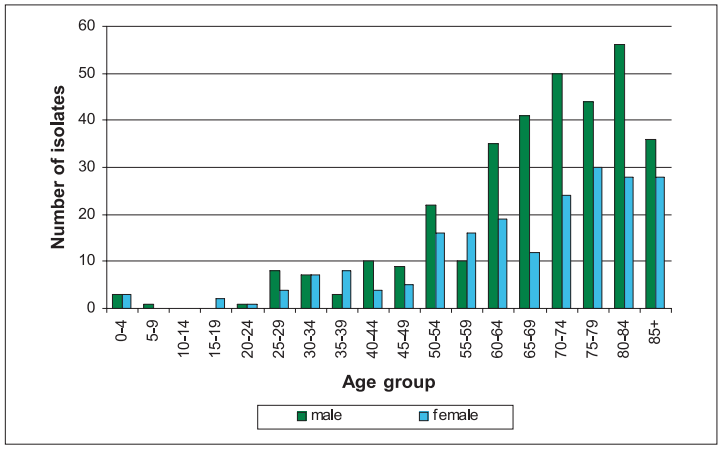

Figure 1. Age and sex distribution of MRSA cases reported to EARSS in 2004

S. pneumoniae

In 2004, there were 400 reports of invasive *S. pneumoniae* infection, of which 41 (10.3%) were non-susceptible to penicillin (penicillin non-susceptible pneumococci, PNSP). PNSP isolates were divided into those with intermediate or low-level resistance (LLR) (minimum inhibitory concentration, or MIC, 0.1–1.0 mg/L) and those with high-level resistance (HLR) (MIC ≥2.0 mg/L). Twenty-eight PNSP (68%) were LLR and seven (17%) were HLR to penicillin. No MICs were reported on six isolates (15%), which were termed "non-susceptible" (NS). Fifty five (14.2%) of 388 isolates tested were resistant to erythromycin. In addition, seven PNSP (including LLR, HLR and NS) isolates were resistant to erythromycin. The proportion of PNSP in Ireland has been decreasing over the six years of surveillance of this pathogen (table 1). The proportions of both PNSP and erythromycin-resistant *S. pneumoniae* in Ireland are at moderate levels compared to other countries reporting to EARSS. The highest proportions of both are observed in Spain and Slovakia.

E. coli

In 2004, there were 1,256 reports of invasive *E. coli* infection, of which 2.4%, 12.5% and 5.7% were resistant to third generation cephalosporins (3GCs), ciprofloxacin and gentamicin, respectively. Eleven isolates (1.3% of isolates tested) were found to produce extended-spectrum beta-lactamases (ESBLs), enzymes that confer resistance to all beta-lactam antibiotics with the exception of carbapenems. Over the three years that surveillance of this pathogen has been on-going, the proportions of isolates resistant to both ciprofloxacin and gentamicin have increased.

In 2004, there were 61 reports of multi-drug resistant (MDR) *E. coli* isolates, defined as resistance to three or more of the four antibiotic classes (ampicillin, 3GCs, ciprofloxacin and gentamicin) required by the EARSS protocol. This represents 6% of all isolates compared with 3.7% (33 isolates) in 2003 and 2.5% (17 isolates) in 2002.

Between 2001 and 2003, an increasing trend in resistance to 3GCs and ciprofloxacin (see figure 3) in *E. coli* was observed in seven and 15 European countries, respectively (EARSS Annual Report 2003). The apparent increase and spread of 3GC resistance coincides with numerous reports of a particular class of ESBL (CTX-M) in *E. coli*, and should act as an early warning system.

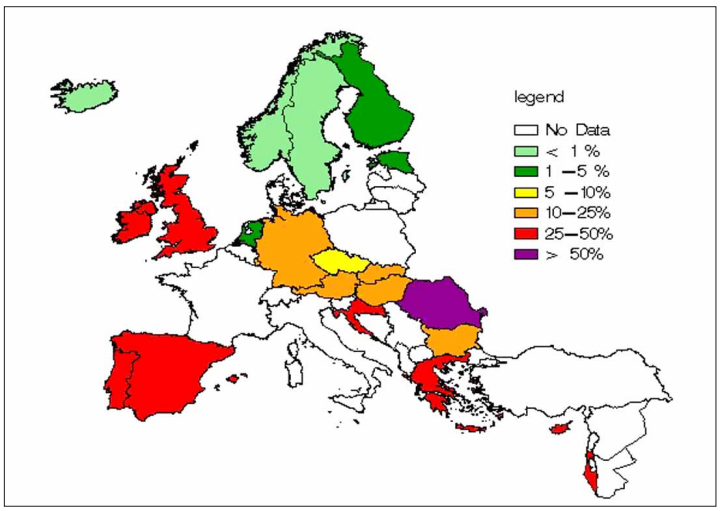

Figure 2. Distribution of MRSA in EARSS countries in 2004 (provisional data taken from EARSS website at www.earss.rivm.nl)

E. faecalis

In 2004, there were 242 reports of *E. faecalis* bacteraemia, of which 1.4% were resistant to vancomycin (vancomycin-resistant *E. faecalis*, VREfa) and 42.2% were resistant to high-level gentamicin (HLG). Although the proportion of VREfa in Ireland is low, it is still slightly higher than that reported in most countries. Resistance to HLG among *E. faecalis* is common throughout Europe.

E. faecium

In 2004, there were 187 reports of *E. faecium* bacteraemia, of which 23.2% were resistant to vancomycin (vancomycin-resistant *E. faecium*, VREfm) and 57.8% were resistant to high-level gentamicin (HLG). The proportion of VREfm has increased over the three years of surveillance of this pathogen (table 1). In 2004, there were 32 isolates with resistance to ampicillin, HLG and vancomycin. Ireland had one of the highest proportions of VREfm in Europe in 2004 (figure 4). In 2004, of countries for which data are available, only Portugal (42.3%) had a higher proportion of VREfm. Ireland also had one of the highest proportions of resistance to HLG.

Conclusions

With the changes to the infectious diseases legislation at the end of 2003, the EARSS pathogens became notifiable as of 1st January 2004. Complete coverage of the Irish population is expected from the start of 2005 as the few remaining non-participant laboratories join EARSS.

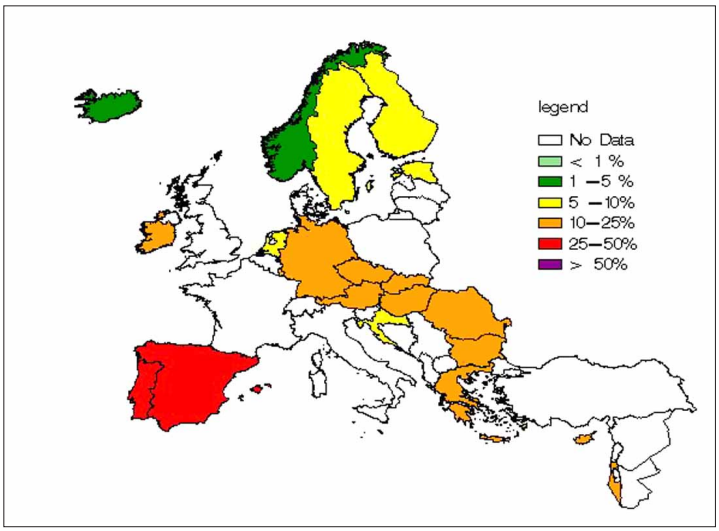

Figure 3. Distribution of ciprofloxacin-resistance among E. coli isolates in EARSS countries in 2004 (provisional data taken from EARSS website at www.earss.rivm.nl)

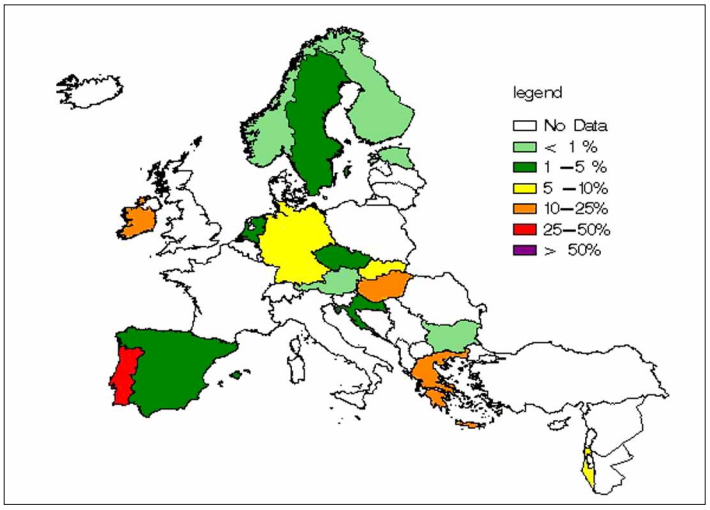

Figure 4. Distribution of vancomycin-resistance among E. faecium isolates in EARSS countries in 2004 (provisional data taken from EARSS website at www.earss.rivm.nl)

It is recognised that continued and improved feedback to the laboratories and public health professionals is a vital part of any surveillance system. In addition to the quarterly newsletters and the annual report, both with aggregate national data, each laboratory receives individual feedback with a summary report of its own data for each quarter and the cumulative total for the year. Regional reports are also generated and distributed to the regional SARI (Strategy for the Control of Antimicrobial Resistance in Ireland) committees and to the relevant clinical microbiologists and medical scientists. Reports with calculated rates of infection (using DoHC Acute Public Hospital Activity) are being developed, the purpose of which will be to further inform effective and appropriate infection control measures. When analysing and interpreting such data (both proportions and rates) geographically, it is important to emphasise that there are often fundamental differences between hospitals and regions. Hospitals serve different populations, some are specialist centres and others are tertiary referral centres and each may have different case mixes (types of patients). Building infrastructure, staffing levels and other resources also vary from hospital to hospital and these factors can influence proportions and rates of infection with AMR organisms. It is also important to consider that an AMR organism, such as MRSA, isolated from a patient may in fact have originated in a different hospital or institution (or indeed in the community).

To understand further the epidemiology of AMR organisms, an enhanced surveillance system has been set up and all laboratories with appropriate staff and resources are encouraged to participate. An update on the enhanced surveillance of the EARSS pathogens will be presented in an upcoming edition of Epi-Insight.

For more information on *S. aureus* and MRSA; EARSS; and European data and maps see respectively: http://www.hpsc.ie/DiseaseTopicsA-Z/StaphaureusandMRSA/ and http://www.ndsc.ie/Publications/AntimicrobialResistance-EARSSReports and http://www.earss.rivm.nl

Stephen Murchan on behalf of the EARSS Steering Group and the Irish EARSS participants

New International Health Regulations

On 23 May 2005, the World Health Assembly approved a new set of international health regulations to manage public health emergencies of international concern. The purpose of the regulations is to *'prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade'*. The regulations will formally come into force two years from the date on which they were approved by the Assembly. The need for new rules and mechanisms for a more coordinated international response to the spread of disease was demonstrated during the recent outbreaks of SARS in 2003 and avian influenza in 2004-2005 and reflects a world were the volume of international air travel allows the spread of disease around the world with unprecedented speed.

The regulations govern the roles of countries, and the World Health Organization (WHO) in identifying and responding to public health emergencies and sharing information about them. Under the regulations countries have an obligation to build national capacity for routine preventive measures as well as to detect and respond to public health emergencies of international concern. These routine measures include public health actions at ports, airports, land borders and for means of transport that use them to travel internationally. Countries will have to assess their capacities to identify and verify events, as well as to control them. The core capacities include:

- **Surveillance, reporting, notification, verification, response and collaboration activities; and**
- **Activities concerning designated airports, ports and ground crossings.**

States are required to ensure that they develop and implement plans of action to ensure that these core capacities are present and functioning throughout their territory. These core capacities must be available on a 24-hour basis.

The above information and more detailed information on the new regulations is available on the WHO website at www.who.int/mediacentre/news/releases/2005/pr_wha03/en/index.html