Annual Report *of the* National Disease Surveillance Centre

"Working in partnership with other health service providers, to improve the health of the Irish population by the provision of the best possible information on disease including infectious diseases through surveillance and independent advice, epidemiological research and training."

-Mission Statement of NDSC

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Foreword:

1999 has been a busy year for the staff of National Disease Surveillance Centre (NDSC), as can be seen from the contents of the First Report. The staff has been led by our dynamic Director, Dr Darina O'Flanagan, who has been largely responsible for the enthusiasm and drive shown by all levels.
In addition there has been an extraordinary level of interest and willingness to serve in up to 60 different professionals who participate in our subcommittees, the results from some of which are referred to in our annual report.

Dr Edmond Smith, Chairman of our Scientific Advisory Committee, has been outstanding in his energetic encouragement of that committee and deserves special mention. On behalf of the Board I wish to acknowledge the work done by all of the professional experts who participate in our subcommittees, for which they receive no remuneration. The active involvement of so many people confirms what many already knew, that is the necessity for having a National Disease Surveillance Centre.

The Director has been tireless in her efforts and her input during 1999 is best illustrated by the fact that the first professional support staff took up their duties in September 1999.

The Minister has stated in the Dail that it is his intention to place NDSC on a statutory footing. In this regard the Board has undertaken a review of the statutes on which national surveillance bodies in other countries have been established.

It is my hope that this issue will be settled early in 2001.

D. O'B Hourihane, Professor of Histopathology, T.C.D., Consultant Histopathologist, St James's Hospital (Retired)

1. Introduction:

This is the first report from the National Disease Surveillance Centre (NDSC) in Ireland. NDSC is Ireland's specialist centre for surveillance of communicable diseases. The centre was set up in late 1998 conjointly by Ireland's eight Health Boards and with the approval of the Minister of Health and Children. The aim of NDSC is to improve the health of the Irish population by the collation, interpretation and provision of the best possible information on infectious diseases. This is achieved through surveillance and independent advice, epidemiological investigation, research and training. NDSC works in partnership with health service providers and sister organisations in other countries to ensure that up-to-date information is available to contribute to the effective control of infectious disease. NDSC is governed by a Board of Management nominated by the Chief Executives of the Health Boards and the Department of Health and Children.

During 1999, while staff were being recruited to the new organisation, surveillance of infectious diseases was concentrated on four important diseases: meningococcal disease, tuberculosis, *E. coli* O157 and antimicrobial resistance. Epidemiological summaries of surveillance of these important infections are included in this report. During 1999, a Scientific Advisory Committee was established, chaired by Dr Edmond Smyth. During 1999 and continuing into the year 2000, this committee established many sub-committees to examine and report on challenges facing the management of many important infectious diseases in Ireland today. NDSC are extremely grateful to the many and multidisciplinary participants in these committees who give voluntarily of their time to develop and make recommendations in relation to the future surveillance and prevention of infectious disease.

Dr Darina O'Flanagan

2. Management Board:

Board of NDSC

Dermot Hourihane,	Professor of Histopathology, T.C.D., Consultant Histopathologist, St James's Hospital (Retired)
Mary Cafferkey,	Consultant Microbiologist, The Children's Hospital, Temple St , Dublin
John Devlin,	Deputy Chief Medical Officer, Department of Health & Children
Dora Hennessy,	Principal Officer, Department of Health & Children
Elizabeth Keane,	Director of Public Health, Southern Health Board
John Magner,	Programme Manager, South Eastern Health Board
Brian O'Herlihy,	Director of Public Health, Eastern Regional Health Authority

3. Scientific Advisory Committee (SAC):

Edmond Smyth,	Faculty of Pathology (Chair)
Catherine Cosgrove,	Environmental Health Officers Association
Stephen Flint,	Univ. of Dublin School of Dental Science
Karina Butler,	Royal College of Physicians in Ireland (Paed)
Luke Clancy,	Royal College of Physicians in Ireland
Eilish Creamer,	Infection Control Nurses Association
Hugh Larkin,	UCD Faculty Veterinary Medicine
Noel Shanaghy,	Academy of Medical Laboratory Science
Lelia Thornton,	Faculty of Public Health Medicine
Patrick Wall,	Food Safety Authority of Ireland
Nuala O Connor,	Irish College of General Practitioners

4. Subgroups and Committees:

Subcommitteess of SAC:

Subcommittee to Review Notifiable Diseases
Jane Murphy, Infection Control Nurses Association
Catherine Cosgrove, Environmental Health Officers Association
Karina Butler, Royal College of Physicians in Ireland (Paed)
Conor Keane, Royal College of Physicians in Ireland (Path)
Peter Harrington, Irish College of General Practitioners
Steven Dempsey, Academy of Medical Laboratory Science
Lelia Thornton, Faculty of Public Health Medicine
Darina O Flanagan, National Disease Surveillance Centre
Derval Igoe, National Disease Surveillance Centre

Viral Haemorrhagic Fever Subcommittee
Brendan O Hare, Consultant Anaesthetist, Crumlin, Dublin
Mary McCarthy, Infection Control Nurses Association
Phil Jennings, Faculty of Public Health Medicine
Karina Butler, Royal College of Physicians in Ireland (Paed)
Bill Hall, National Virus Reference Laboratory, Dublin
Hilary Humphreys, Royal College of Physicians in Ireland (Path)
Liam English, Academy of Medical Laboratory Science
Alan Smith, National Disease Surveillance Centre
Darina O Flanagan, National Disease Surveillance Centre

Legionnaires Disease Subcommittee
Al Donnelly, Environmental Health Officers Association
Rosemary Hone, Royal College of Physicians in Ireland (Path)
Declan Bedford, Faculty of Public Health Medicine
Tom Donnelly, Health & Safety Authority
Marina Burd, Infection Control Nurses Association
David Coleman, School of Dental Science, Trinity College, Dublin
Alan Smith, National Disease Surveillance Centre
Darina O Flanagan, National Disease Surveillance Centre

Subcommittee on Antimicrobial Resistance in Ireland
Eilish Creamer, Infection Control Nurses Association
Mary Cafferkey, Royal College of Physicians in Ireland (Paed)
Conor Keane, Royal College of Physicians in Ireland (Path)
Olive Murphy, National Disease Surveillance Centre
Nuala O Connor, Irish College of General Practitioners
Leonie Clark, Irish Pharmaceutical & H ealthcare Association
Tony Murray, Academy of Medical Laboratory Science
Nola Leonard, Faculty of Veterinary Medicine, UCD
Martin Cormican, Royal College of Physicians in Ireland (Path)

David Coleman, School of Dental Science, Trinity College, Dublin
Ann Shannon, Faculty of Public Health Medicine
Lynda Fenelon, Royal College of Physicians in Ireland (Path)
Celine Murren, Consumers Association Ireland, Dublin
Michael Barry, Consultant Physician, Pharmacoeconomics, St. James's Hospital, Dublin
Michael Gunn, Veterinary Officer, Dept of Agriculture Food and Rural Development

Subcommittee on Nosocomial Aspergillosis
Eoin O Morain, Architect, Dublin
Frank Jackman, Dept. of Health & Children
Olive Murphy, National Disease Surveillance Centre
Eileen Connolly, Dept. of Health & Children
Margaret Fitzgerald, National Disease Surveillance Centre
Anthony Hogan, Institute of Engineers, Dublin
Lynda Fenelon, Royal College of Physicians in Ireland (Path)
Shaun McCann, Royal College of Physicians in Ireland (Path)
Siobhan Prout, Infection Control Nurses Association

Committees:

EARSS Steering Group
Lynda Fenelon, Consultant Microbiologist, St Vincents Hospital, Dublin
Olive Murphy, Consultant Microbiologist, Bon Secours Hospital, Cork
Conor Keane, Consultant Microbiologist, St James's Hospital, Dublin
Hilary Humphreys, Consultant Microbiologist, Beaumont Hospital, Dublin
Angela Rossney, Dept. of Medical Microbiology, St James's Hospital, Dublin
Darina O Flanagan, National Disease Surveillance Centre
Dominic Whyte, National Disease Surveillance Centre

Computerised Infectious Disease Reporting Committee 1999
Thomas Quigley, Food Safety Promotions Board
Fiona Ryan, Specialist in Public Health Medicine, Southern Health Board
Noel Ryan, Systems Analyst, Mid-Western Health Board
Rosaleen Corcoran, Director of Public Health, North Eastern Health Board
Fiona Kenny, Consultant Microbiologist, Sligo General Hospital
Darina O Flanagan, National Disease Surveillance Centre
Derval Igoe, National Disease Surveillance Centre
Margaret Fitzgerald, National Disease Surveillance Centre
John Brazil, National Disease Surveillance Centre
Dominic Whyte, National Disease Surveillance Centre

Staff of National Disease Surveillance Centre

Darina O Flanagan, Director
Gerry Boyle, Administrator
John Brazil, Information Technology Manager
Margaret Fitzgerald, Surveillance Scientist
Derval Igoe, Specialist in Public Health Medicine
Kirsty MacKenzie, Administrative Assistant
Olive Murphy, Microbiologist
Olivia O Connell, Administrative Assistant
Alan Smith, Medical Officer
Dominic Whyte, Surveillance Scientist

5. Tuberculosis in Ireland in 1998:

In Ireland the incidence of tuberculosis has declined over the last 50 years from 6,795 new cases in 1952, giving an incidence of 230/100,000 to 424 new cases in 1998, an incidence of 11.7/100,000. There is no reason for complacency, as 1998 was the first year since 1991 that there has been an increase in the crude number of notified cases. Although the increase is small experience in other countries with resurgent tuberculosis would indicate that every effort to combat tuberculosis in Ireland needs to be maintained, if not enhanced.
In the context of 1998 TB notifications, a definite case of tuberculosis was defined as one in which infection due to *Mycobacterium tuberculosis*, *M. bovis* or *M. africanum* was confirmed by culture. An other than definite case was defined as one, in the absence of confirmation by culture, in which there were signs and symptoms compatible with tuberculosis and the clinician's decision to treat the patient with a full course of anti-tuberculous drugs.

1998 TB data

Four hundred and twenty four cases (**424**) of TB, 262 males (61.8%) and 162 females (38.2%) were notified in1998. This is a notification rate of **11.7/100,000** population which is a 1.7% increase on 1997 (11.5/100,000), a reversal of the steady downward trend in the yearly notification rate seen since 1991. The incidence rate reported from England and Wales in 1998 was 10.9/100,000 [1]and in Northern Ireland 3.6/100,000 [2]

Table 1. Notified cases of Tuberculosis in Ireland 1991-1998

Year	Number	Crude Rate/100,000
1991	640	18.2
1992	604	17.1
1993	598	16.9
1994	524	14.5
1995	458	12.6
1996	434	12.0
1997	416	11.5
1998	424	11.7

Age & Sex

The age standardised TB incidence rate did not differ significantly by health board. One region, the Midland Health Board (rate 4.8 per 100,000) had a significantly lower rate than the national rate (rate 11.7 per 100,000). (Table 2)

Table 2. Age standardised TB incidence rate in Ireland 1998

Health Board	TB Cases	Age standardised incidence rate/100,000	Confidence interval
WHB	54	14.9	10.9-18.9
MWHB	47	14.8	10.6-19.1
SHB	78	14.1	11.0-17.2
EHB	152	12.0	10.0-13.9
NEHB	29	9.3	5.8-12.7
SEHB	35	8.9	5.9-11.8
NWHB	19	8.6	4.7-12.6
MHB	10	4.8	1.8-7.8
Ireland	**424**	**11.7**	**10.6-12.8**

Two hundred and twenty three cases (52.6%) were aged over 45 years with just under a third of all cases occurring in the over 65 age group (31.4%).
The age and sex specific rates per 100,000 population in Ireland in 1998 are illustrated in Figure 1. The highest rate was observed in those over 65 years.

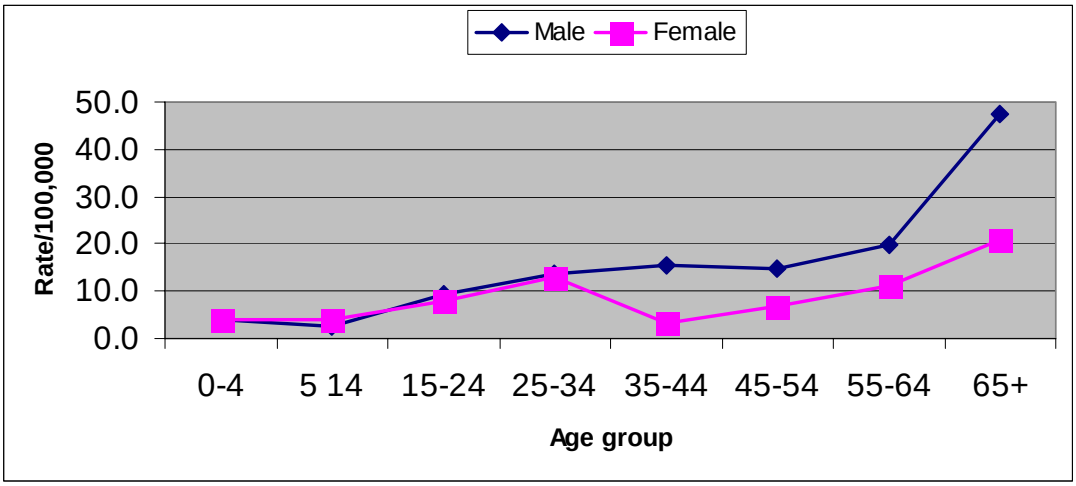


Figure 1. Age & sex specific rates of notified cases of TB per 100,000

Diagnostic and Clinical Details

Of the 424 TB notifications, 241 (56.8%) were definite cases i.e. culture confirmed (rate 6.7 per 100,000) and 183 (43.2%) were other than definite cases (rate 5.1 per 100,000).

Of the 424 TB notifications, 284 were pulmonary TB (67%), 102 cases were extra-pulmonary TB (24%), 31 cases were pulmonary+extra-pulmonary TB (7.3%) and 7 cases were primary TB (1.7%). The diagnostic breakdown in each Health Board is shown in Table 3.

Table 3. Diagnostic categories of TB by Health Board in 1998

Health Board	Pulmonary	Pulmonary+Extrapulmonary	Extrapulmonary	Primary	Total
EHB	110	12	29	1	152
MHB	8	0	2	0	10
MWHB	35	6	6	0	47
NEHB	21	2	5	1	29
NWHB	14	2	3	0	19
SEHB	23	1	10	1	35
SHB	38	8	29	3	78
WHB	35	0	18	1	54
Ireland	284	31	102	7	424

For international comparisons, WHO requires all cases with a pulmonary component be classified as pulmonary cases. Of a total of 315 pulmonary cases according to WHO criteria, 192 (61%) of pulmonary cases were definite (rate 5.3 per 100,000). There were 121 (38.6%) cases of sputum smear positive pulmonary cases (rate 3.4 per 100,000).

Of the 241 definite cases, 96.7% of isolates were *Mycobacterium tuberculosis* (n=235) and 2.5% were *Mycobacterium bovis* (n=6).

Sensitivity data was available on 234 of 241 definite cases (97.1%). Resistance was documented in 4 *M.tuberculosis* isolates. Two were resistant to isoniazid alone and two were resistant to streptomycin alone. There were no multi-drug resistant cases of TB in 1998.

Two patients had HIV in association with TB. Both cases were pulmonary TB and both were culture positive for *M.tuberculosis*, which were fully sensitive to standard TB chemotherapy.

There were 35 patients (8%) born outside Ireland: 13 from Asia, 10 from Africa, 8 from Europe, 2 from America and 2 from Oceania.

There were 41 deaths (9.7%) amongst the 424 notified cases of TB in Ireland in 1998. In 6 cases (1.4%) TB was the recorded cause of death giving a crude death rate of 0.2/ 100,000. The ages of these 6 cases ranged from 47 to 77 years with a median age of 60.5 years.

A summary profile of the epidemiology of TB in Ireland for 1998 is shown in Table 4.

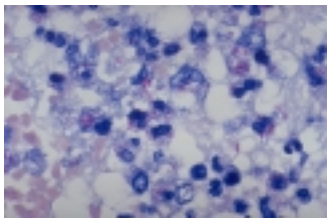
Table 4. Profile of TB in Ireland 1998

Total number of cases	424
Notification rate per 100,000	11.7
New cases	421
Recurrent cases	3
Cases in foreign-born patients	35
Culture positive cases	241
Smear positive pulmonary cases	121
Cases resistant to isoniazid alone	2
Cases resistant to rifampicin alone	0
Cases resistant to ethambutol alone	0
Cases resistant to streptomycin alone	2
Multi-drug resistant cases	0

TB Surveillance-The Future

On the 1/1/2000 the National Disease Surveillance Centre (NDSC), in consultation with the eight Irish Health Boards and the National Working Group on TB implemented an enhanced TB surveillance system based on the European minimum dataset [3]. It is called the National TB Surveillance System or NTBSS 2000. An important feature of NTBSS includes a newly designed TB notification form to record individual case data, with an increased emphasis on the collection of outcome data. Regional participants also have the added option of recording individual case data on a stand-alone Epi-Info based TB notification database at regional level. Regional data is transferred to NDSC quarterly, for analysis and dissemination of information to providers and to policy makers.

From the first year of national data analysis we now know that in Ireland, the notification rate is higher than that seen in England/Wales and Northern Ireland. TB is more common in older age-groups and in men. It is important to note that almost 50% of cases occurred in those aged under 45 years, indicating considerable ongoing transmission of tuberculosis in Ireland. A small proportion of cases occurred in patients of foreign origin (8,3%) much lower than that reported for other countries in the EU. In addition there were no cases of multi-drug resistant TB. TB in HIV positive patients was not common. There was some regional variation in the rate of TB. The proportion of patients with culture confirmed disease (61%) was similar to that found in other EU countries (58%).



With the implementation of enhanced TB surveillance (NTBSS 2000), it will be possible to detect not only any increased incidence of infection whether in the general population or in specific high risk groups but also to accurately monitor the outcome of TB treatment which is of great importance in controlling spread of the disease. The enhanced TB surveillance programme will also allow drug resistance to be continually monitored.

References

1. Tuberculosis: incidence rising, resistance stable, surveillance enhanced and communication improving. *CDR Weekly* 1999; (9) **51**: 453-6

2. CDSC, Northern Ireland. Annual Report 1999.

3. Rieder HL, Watson JM, Raviglione MC, Forssbohm M, Migliori GB, Schwoebel V et al. Surveillance of tuberculosis in Europe. *Eur Resp J* 1996;**9**:1097-1104.

7. Meningococcal Disease in Ireland in 1999:

Introduction

Bacterial meningitis and septicaemia are systemic infections caused by a variety of organisms, the most common being *Neisseria meningitidis*. *N. meningitidis* is a leading cause of invasive meningococcal disease (IMD) in children and young adults in Ireland, Europe and the US.[1,2] Preventing and controlling meningococcal disease remains a public health challenge. A total of 535 cases of meningococcal disease were reported in the Republic of Ireland in 1999, an increase of 19.4% from 1998. Of the 535 cases notified 435 were laboratory confirmed. Group B and C *N. meningitidis* accounted for 65.4% and 30.4% of the laboratory confirmed cases, respectively.

Source of Data

The National Disease Surveillance Centre (NDSC) is now responsible for the collation and analysis of national data on bacterial meningitis.

The enhanced surveillance of bacterial meningitis (including meningococcal septicaemia) commenced in the Republic of Ireland in 1997. The Departments of Public Health collate the clinical and laboratory information on the cases of bacterial meningitis in their respective health boards. Quarterly returns are made to the Department of Health and Children. Copies of these reports are forwarded to NDSC.

The National Meningococcal Reference Laboratory (MRL) was established at 1996 at the Children's Hospital, Temple St. Data is obtained from the MRL on a monthly basis.

Using these two sources, data from 1997 to 1999 has now been analysed. A summary of these findings is presented in this report.

Results

Bacterial Meningitis Notifications

In the Republic of Ireland the total number of bacterial meningitis notifications (including meningococcal septicaemia) increased from 491 (13.54/100,000) in 1998 to 587 (16.19/100,000) in 1999 i.e. an increase of 19.6%. Meningococcal disease accounted for 91.1% of the bacterial meningitis notifications, while *Streptococcus pneumoniae*, *Mycobacterium tuberculosis* and *Haemophilus influenzae* accounted for 3.2%, 1.2% and 0.5% of the notifications, respectively.

Meningococcal Disease

In 1999 535 cases of IMD were notified through the enhanced surveillance system. The notification rate for IMD was 14.75/100,000 of the total population, an increase of 19.4% from 1998 and 1997 (Figure 2). An incidence rate of 10.8/100,000 population was reported in Northern Ireland in 1999.[3] Of the 535 cases of IMD notified in the Republic of Ireland in 1999 435 (81%) were laboratory confirmed (Table 5). This was slightly higher than the proportions that were laboratory confirmed in previous years i.e. 75% in 1998 and 68% in 1997. In 1999 >50% of the cases were diagnosed by the polymerase chain reaction (PCR) technique. The male:female ratio was 1.2:1.

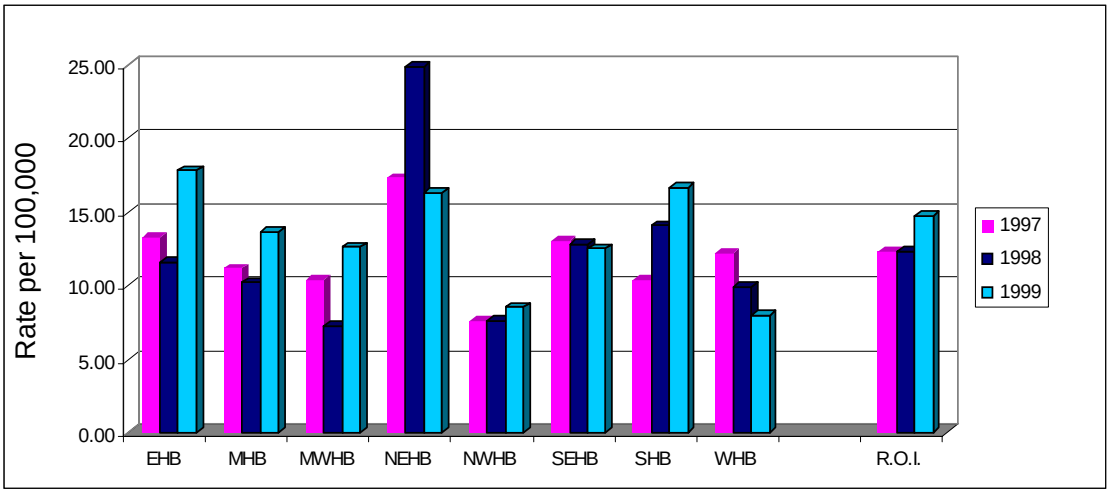


Figure 2. *Annual Meningococcal Notification Rates in the Republic of Ireland.*

Table 5. Laboratory-confirmed cases and notifications of meningococcal disease by health board, in the Republic of Ireland for 1999

Health Board	Lab Cases	Lab-Cases/100,000	Total notifications	Notifications/100,000
EHB	197	15.20	231	17.82
MHB	27	13.14	28	13.62
MWHB	29	9.15	40	12.62
NEHB	44	14.37	50	16.33
NWHB	17	8.06	18	8.54
SEHB	37	9.45	49	12.52
SHB	62	11.34	91	16.65
WHB	22	6.24	28	7.95
Total	434	12.97	535	14.75

Rates calculated using population data from 1996 census

N. meningitidis Groups B and C accounted for 96% of laboratory confirmed cases, in 1999. The proportion due to Group B has gradually increased over the last three years from 55% in 1997 to 66% in 1999, while the proportion due to Group C has decreased from 39% in1997 to 30% in 1999. Although the proportions due to Group C may have dropped the number of cases has not decreased (Table 6). The highest age-specific incidence was in the <1 year olds over the three-year period (Figure 3a & 3b), with a decline in incidence in the older age groups. However, a slight increase in incidence of *N. meningitidis* Group C was observed in those aged between 15-19 years (Figure 3b).

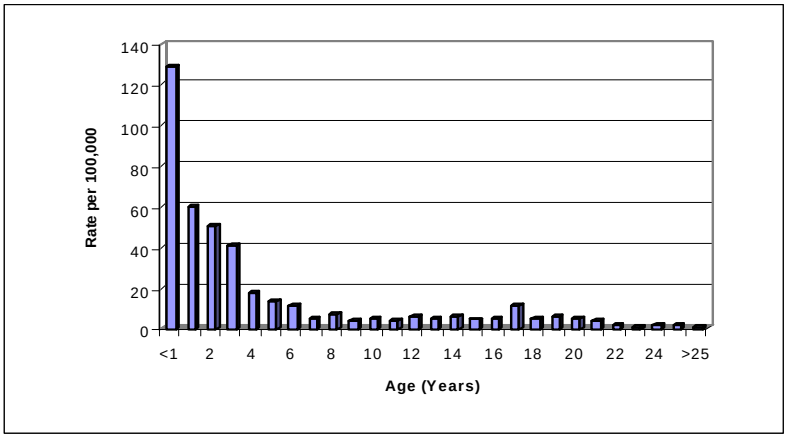


Figure 3a: *Average age-specific incidence of laboratory confirmed cases of* N. meningitidis *Group B in the Republic of Ireland 1997-1999.*

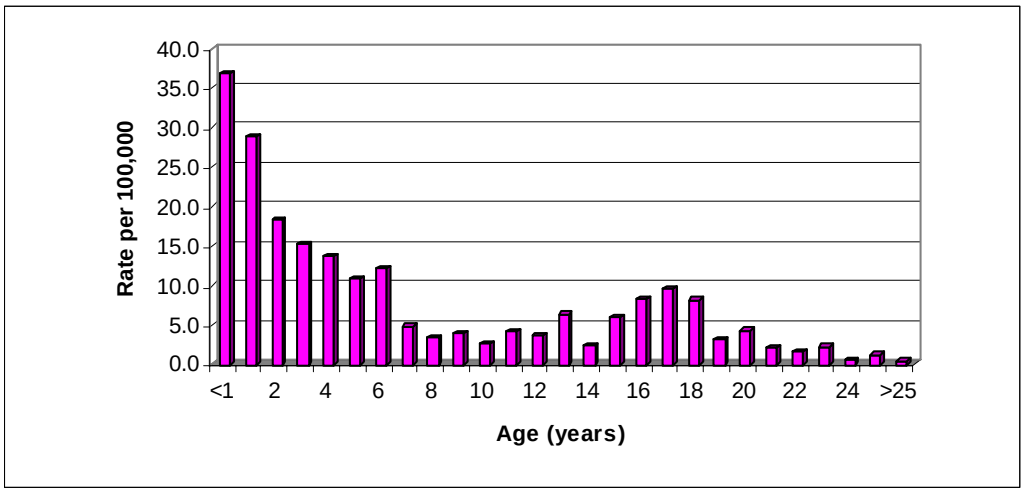


Figure 3b: *Average age-specific incidence of laboratory confirmed cases of* N. meningitidis *Group C in the Republic of Ireland 1997-1999.*

Age standardised incidence of *N. meningitidis* by county

The age-standardised incidence rates for *N. meningitidis* Group B in counties Leitrim (0/100,000), Roscommon (0/100,000) and Waterford (3.1/100,000; 95% CI = 0-6.68) were significantly less than the national rate (7.8/100,000; 95% CI = 6.87-8.68). Although, the highest incidence rates for *N. meningitidis* Group B were in Dublin (11.6/100,000; 95% CI = 9.52 - 13.7) and Cavan (14.03/100,000; 95% CI = 4.38 - 24.2), the differences in these rates compared with the national rate were not statistically significant. (Figure 4)

The national rate for *N. meningitidis* Group C was 3.6/100,000(95% CI = 2.99-4.23). Significantly lower rates were reported in counties Longford (0/100,000), Cavan (0/100,000), Sligo (0/100,000, Roscommon (0/100,000) and Limerick (0.6/100,000; 95% CI = 0 - 1.8). The highest rates were in Kilkenny (7.8/100,000; 95% CI 1.55 - 14.0) and Offaly (11.3/100,000; 95% CI 2.92 - 19.6). However, when compared with the national rate these rates were not statistically significant. (Figure 4)

Deaths due to Meningococcal Disease

In 1999, 17 (0.47/100,000) deaths due to IMD were notified. The case fatality rate was 3.2% (17 deaths in 535 cases) in 1999, compared with 3.6% (16/448) in 1998 and 5.6% (25/448) in 1997.

Bacterial Meningitis other than Meningococcal Disease

Although *S. pneumoniae* was the second most common form of bacterial meningitis notified after *N. meningitidis,* it accounted for only 3.2% of the notifications. In 1999 19 cases of *S. pneumoniae* meningitis were notified in the Republic of Ireland. This was equivalent to a notification rate of 0.52/100,000.

The number of cases of *H. influenzae* notified remained unchanged from 1998, 3 cases (0.08/100000) were notified in the Republic of Ireland, compared with 7 cases in 1997 (0.19/100,000).

Acknowledgements

NDSC wish to thank all those who contributed to the data, namely Departments of

Public Health, the Meningococcal Reference Laboratory, Microbiology Laboratories and the Community Care Senior Area Medical Officers and Area Medical Officers. NDSC acknowledges the Department of Health and Children for providing the data for analysis.

References

1. CDC. Control and prevention of meningococcal disease and control and prevention of serogroup C meningococcal disease: evaluation and management of suspected outbreaks. *MMWR* 1997; **46** :(No. RR-5).
2. Noah, N. and Henderson, B. Surveillance of bacterial meningitis in Europe 1997/98. London: PHLS Communicable Disease Surveillance Centre, 1999.
3. CDSC, Northern Ireland. Annual Report 1999.

Table 6: Number of laboratory confirmed cases of N. meningitidis *reported 1997-1999*

	Total			Group B			Group C		
Age	1997	1998	1999	1997	1998	1999	1997	1998	1999
<1	74	84	101	51	64	73	16	17	21
1-4	110	128	145	68	92	92	35	32	47
5-9	38	41	55	14	22	34	21	17	21
10-14	24	29	39	12	8	32	11	20	7
15-19	50	44	51	20	17	29	29	24	20
20-24	18	9	21	10	5	12	7	4	9
25-44	10	16	9	8	9	7	2	5	2
45-64	11	9	5	2	6	1	8	3	3
>65	5	5	9	2	4	5	3	1	2
??	3	3		0	3		3	0	
Total	343	368	435	187	230	285	135	123	132

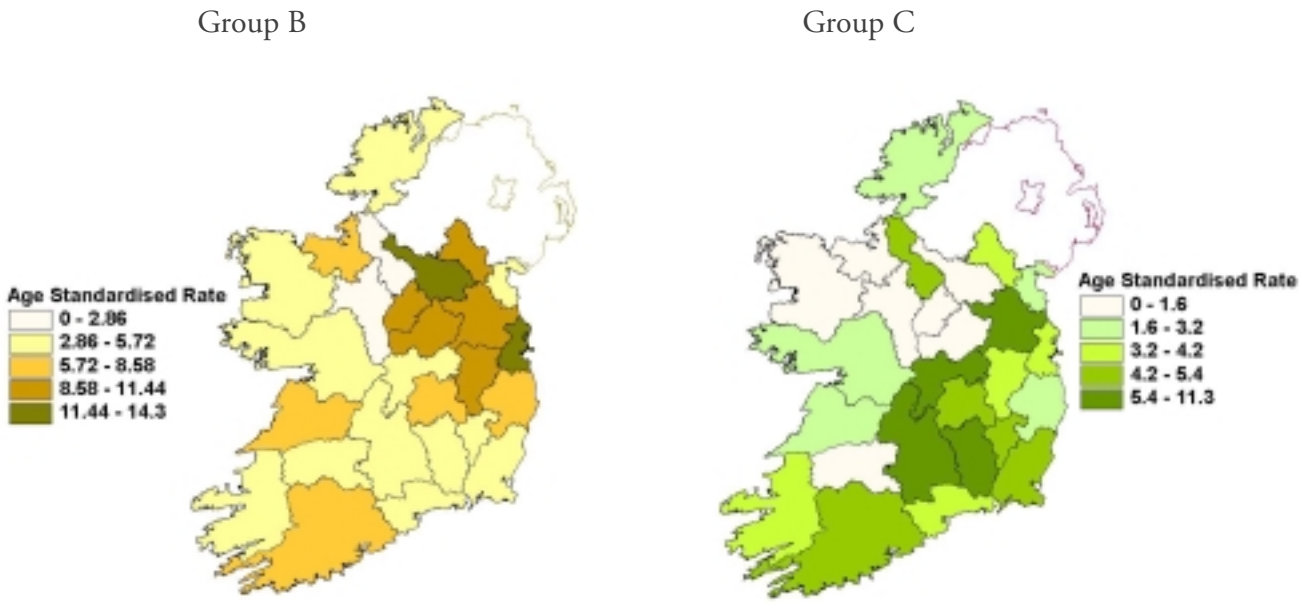


Figure 4: *Age-standardised incidence of laboratory-confirmed cases of Group B and Group C* N. meningitidis *in Ireland 1999*

8. Escherichia coli O157 in Ireland in 1999:

Introduction

Verocytotoxin producing *Escherichia coli (VTEC)* of which *E coli* O157:H7 is the most common member, has emerged over the past decade as a serious global public health concern. Verocytotoxigenic *E coli* are capable of producing toxins that give rise to a wide range of symptoms including, non-bloody diarrhoea, haemorrhagic colitis, haemolytic uraemic syndrome and thrombotic thrombocytopenic purpura.

In Ireland, *E coli* O157:H7 is not a notifiable disease. However, clinical microbiologists report suspect cases to public health colleagues so that appropriate public health action can be taken. In 1999, NDSC, in co-operation with the Directors of Public Health, established a surveillance system for VTEC O157. 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 the National Disease Surveillance Centre. This information includes socio-demographic data, clinical data, possible risk factors and information on links between cases.

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

Clinical description

An infection of variable severity characterised by diarrhoea (often bloody) and abdominal cramps. Illness may be complicated by haemolytic uraemic syndrome (HUS) or thrombotic thrombocytopenic purpura (TTP); asymptomatic infections may also occur and are included as cases.

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 from a clinical specimen

Probable cases that were subsequently confirmed as not H7 or Shiga toxin producing were removed from the database.

Results

In 1999, 51 definite cases of *E coli* O157:H7 were reported, giving a crude incidence rate of 1.4 per 100,000 population. In addition, one probable case of VTEC O157 was identified. Subsequent analysis refers to the 51 confirmed cases.

Table 7: Number of cases of E coli O157:H7and crude incidence rate in Ireland, 1996-1999

Year	Number of reported cases	Crude incidence rate per 100,000 population
1996	8	0.22
1997	31	0.85
1998	76	2.1
1999	51	1.41

The age standardised incidence rate varied by health board as follows:

Table 8: Number of cases, crude incidence rate and age standardised incidence rate with 95% confidence intervals by health board, Ireland, 1999.

Health Board	N cases	Crude incidence rate/100,000	Age standardised incidence rate/100,000	[95% CI]
EHB	9	0.7	0.7	[0.2-1.1]
MHB	9	4.4	5.8	[2.5-9.1]
MWHB	12	3.8	3.9	[1.7-6.0]
NWHB	2	0.9	1.0	[0.4-2.3]
SEHB	6	1.5	1.5	[0.3-2.7]
SHB	9	1.6	1.7	[0.6-2.7]
WHB	4	0.6	0.5	[0.2-1.2]
NEHB	0	0	0	
Total	51	1.4		

Twenty five (49%) cases arose in females and 26 (51%) arose in males. Most cases occurred in young children, with a second peak in the 25 to 44 year age group.

Table 9: Number (%) of cases of E coli O157:H7 in each age group, Ireland, 1999.

Age group	Number of cases	Percent
< 1 years	1	2
1-4 years	20	39.2
5-9 years	7	13.7
10-14 years	1	2
15-24 years	3	5.9
25-44 years	12	23.5
45-64 years	3	5.9
65 + years	4	7.8
Total	51	

The age specific incidence rate is shown in Figure 5.

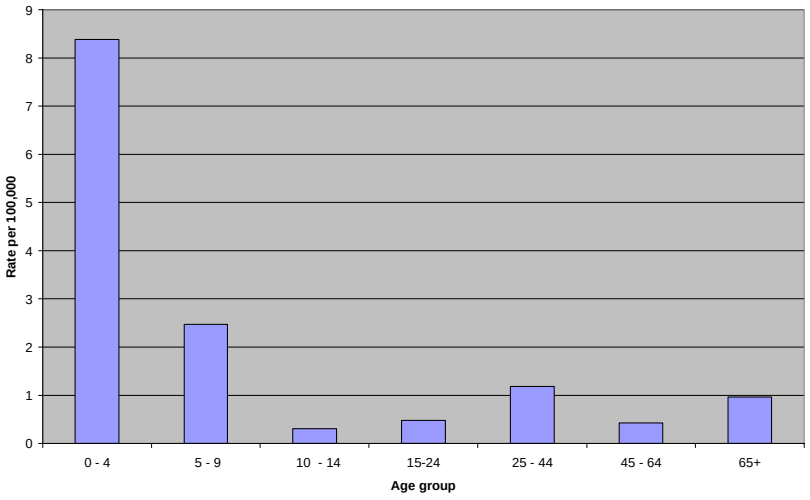


Figure 5: Age specific incidence rate of E coli *O157:H7, Ireland 1999.*

Clinical features

In total 43 (84.5%) of cases had symptoms, and 8 (15.7%) were asymptomatic. Reported symptoms included bloody diarrhoea in 20, and haemolytic uraemic syndrome (HUS) in 3 cases. The three cases of HUS occurred in children, ranging in age from 1 to 8 years. All three children recovered from their illness. One person died, but the cause of death was related to co-morbidity.

Laboratory findings

Phage typing of isolates/strains showed that 17 cases were PT 21/28 (33.3%) and 34 cases were PT 32 (66.7%). The majority of cases of PT 21/28 occurred in cases resident in the Mid Western Health Board region.

Table 10: Phage types of cases of E coli O157:H7 by health board, Ireland, 1999.

Health Board	N PT 21/28	N PT 32
EHB	4	5
MHB	0	9
MWHB	10	2
NWHB	0	2
SEHB	0	6
SHB	3	6
WHB	0	4
Total	17	34

The highest number of cases were identified in the late summer (figure 6)

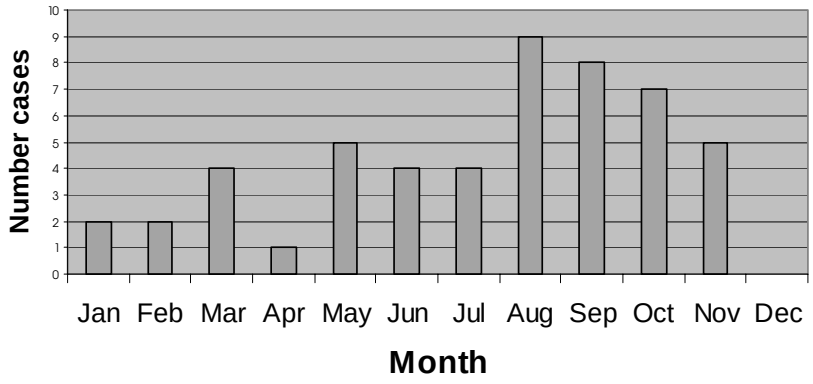


Figure 6: Cases of E coli O157:H7 by month of onset of symptoms (or of diagnosis, if asymptomatic), Ireland, 1999.

Many of the cases identified in 1999 occurred in association with other cases. In all, nine family outbreaks of *E coli* O157:H7 were detected in 1999. No generalised outbreaks of *E coli* O157:H7 were detected, although there was a generalised crèche based outbreak of *E coli* O26.

The first year of information from this enhanced surveillance system has allowed us to describe the epidemiology of *E coli* O157:H7 in Ireland. It is hoped to expand the system to include non O157 toxin producing *E coli* in the near future.

Acknowledgements

This report would not be possible without the co-operation of microbiologists, medical laboratory staff, SAMOs, AMOs, SPHMs, PEHOs and EHOs. Thank you to all these professional groups who together allow for the epidemiology of VTEC O157:H7 in Ireland to be characterised.

9. Antimicrobial Resistance in Ireland in 1999:

European Antimicrobial Resistance Surveillance System (EARSS):
Introduction: The National Disease Surveillance Centre (NDSC) is the coordinating body in Ireland for the EARSS project. Some authors state that we are currently in the midst of a worldwide crisis of antibiotic resistance combined with increasing frequency of emerging infectious diseases. They indicate that especially during the past two decades, resistance has occurred not only in the developing world but also in several countries in the western world, leading to multidrug resistance in tuberculosis and to the re-emergence of old infectious diseases, including an increase in several almost untreatable nosocomial infections.
The NDSC, on behalf of the Department of Health and Children, is currently reviewing antimicrobial resistance in Ireland and will advise on the development of strategies to combat this growing problem in the near future. Part of this report will be to advise on surveillance strategies for the future. Baseline data on antimicrobial use is important for the development of these strategies. With this in mind, NDSC captures antimicrobial resistance data on *Staphylococcus aureus (S.aureus)* and *Streptococcus pneumoniae (S.pneumoniae).* The isolates are only those detected in blood or cerebrospinal fluid. In the first full year of operation, 514 isolates of *S.aureus* and 159 isolates of *S.pneumoniae* were tested. Vital to the integrity and completeness of this data are the EARSS Referral laboratories in St James's Hospital and Beaumont Hospital, who carry out further testing of selected strains. The members of the EARSS Steering Group include medical microbiologists who gave time voluntarily to the project.

In 1999, 12 laboratories in Ireland contributed information by a paper-based reporting system. NDSC collates this data into a database called WHONET. The data is analysed and transmitted to the Project Management Team, Institute of Public Health and Environment (RIVM), in the Netherlands.

Methods & Materials:
Resistance Definitions: *S.aureus*
Methicillin sensitive *S.aureus* – MIC<4mg/L (MSSA)
Methicillin resistant *S.aureus* – MIC≥4mg/L (MRSA)

Resistance Definitions: *S.pneumoniae*
Penicillin susceptible - MIC≤0.06mg/L (PSSP)
Penicillin intermediate – MIC=0.1 to 1.0mg/L ("PRSP")
Penicillin resistant – MIC≥2mg/L ("PRSP")
These definitions are used for the purposes of analysis in Ireland and may not be definitions explicitly used in other parts of the EU.

EARSS Case Definitions:
(1) *Resistance data on the first isolate only of each strain from the blood of each patient with *S.aureus* infection, confirmed by a coagulase test.
*This definition is a modification of the Isolate Report form to reflect changes made during the project, to include all *S.aureus*, not simply hospital acquired infections.
(2) Resistance data on the first isolate only, of each strain from the blood or CSF of each

patient with a community acquired *S.pneumoniae* infection, confirmed by optochin test.

Results:
S.aureus
514 isolates were received, (Range 119-138 for the 4 quarters).
Based on laboratory returns, resistance to selected antimicrobials is shown in Table 11.

Table 11: Breakdown of resistance in S.aureus *to selected antimicrobials for 1999.*

All S.aureus	n	Resistant	%Resistant	95% Confidence Intervals
Oxacillin/Methicillin	514	201	39.1%	34.9-43.3%
Erythromycin	420	174	41.4%	36.7-46.1%
Ciprofloxacin	377	167	44.3%	39.3-49.3%
Gentamicin	483	120	24.8%	21.0-28.7%
Vancomycin	477	0	0.0%	

Analysis of EARSS SJH MRSA data: The results of the antibiograms performed at the EARSS Referral Laboratory in St James's Hospital (SJH) are shown in table 12.

Table 12: Antibiogram analysis of MRSAs from SJH for 1999.

Antibiotic	S	M	R	n
Chloramphenicol	98.8%	0.0%	1.2%	173
Ciprofloxacin	5.8%	0.0%	94.2%	173
Erythromycin	5.2%	0.0%	94.8%	173
Fusidic Acid	91.9%	6.4%	1.7%	173
Gentamicin	41.6%	1.2%	57.2%	173
Lincomycin	49.1%	0.0%	50.9%	173
Mupirocin	48%	49.1%	2.9%	175
Rifampicin	98.3%	0.6%	1.2%	173
Tetracycline	98.8%	0.6%	0.6%	173
Trimethoprim	86.1%	3.5%	10.4%	173
Vancomycin	100.0%	0.0%	0.0%	173

The results in table 12 are based on standardised testing of all MRSA isolates sent to the EARSS referral laboratory. Minimum inhibitory concentrations were carried out on oxacillin and vancomycin using the E-test method.

S.pneumoniae
159 isolates were received, (Range 15-59 for the 4 quarters).
A summary table of the proportion resistant, sample size and confidence limits is shown in table 13. This is an indication as to the reliability of the results given the sample used.

Table 13: Breakdown of resistance in S.pneumoniae *to selected antimicrobials for 1999.*

	n	%Resist	95% Confidence Intervals
Penicillin/Oxacillin	159	18.2%	12.24-24.24%
Erythromycin	121	14.9%	8.54-21.22%
Tetracycline	87	1.1%	0-3.39%
Vancomycin	75	0.0%	
Cefotaxime	80	0.0%	

The distribution of the samples received through the year is illustrated in figure 7. It follows the expected pattern of pneumococcal infection in humans, high in winter months and lower in summer months.

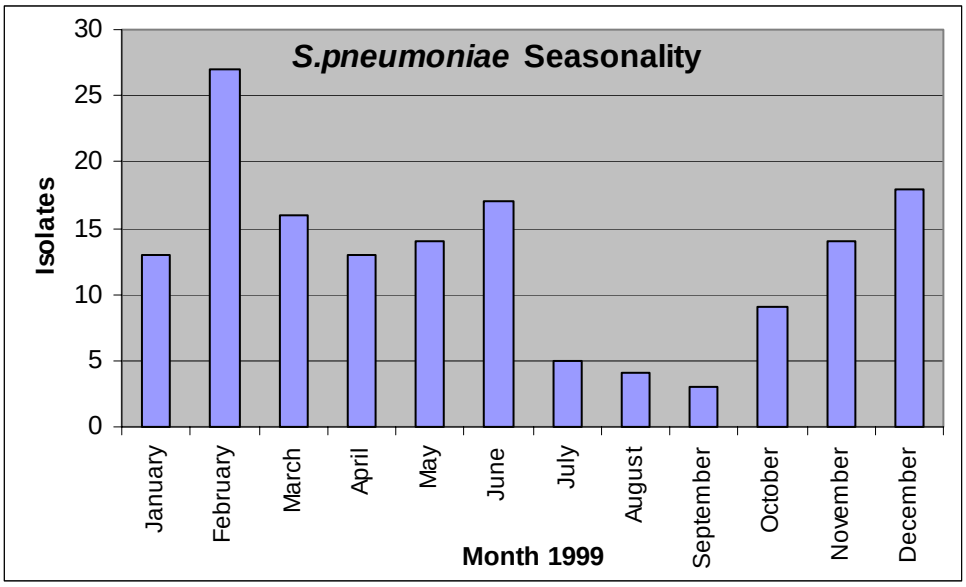


Figure 7: Monthly distribution of S.pneumoniae *in EARSS 1999.*

Analysis of RCSI/Beaumont data: 1999
Analysis of *S.pneumoniae* at RCSI/Beaumont revealed penicillin E-test data shown in figure 8.

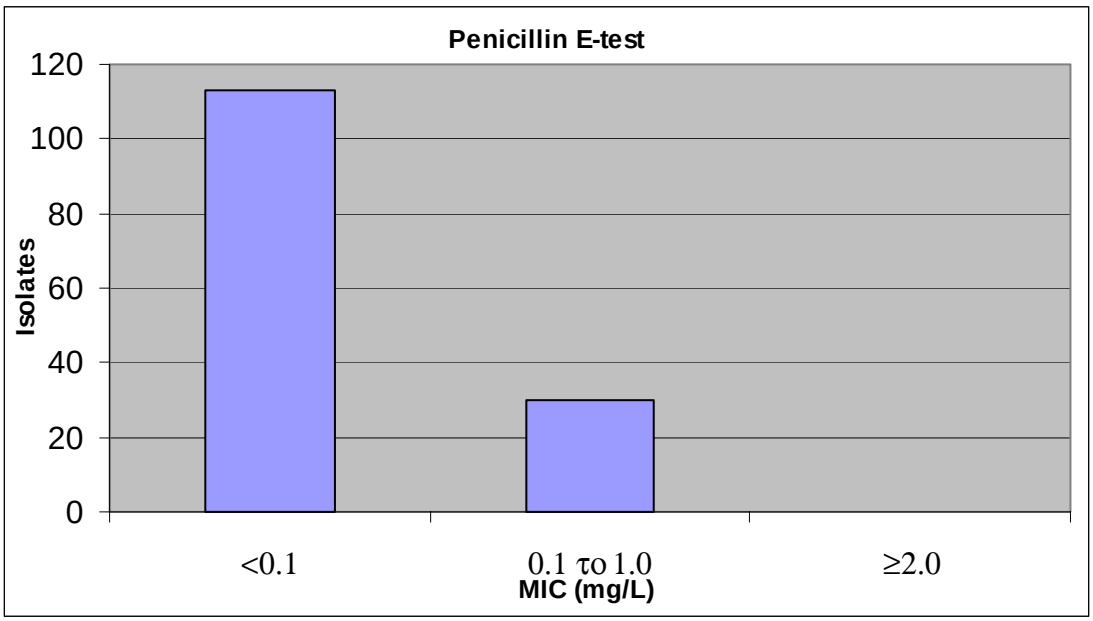


Figure 8: Distribution of S.pneumoniae *penicillin (oxacillin) E-tests in 1999.*

Based on the BSAC breakpoint data published on March 2000, four of 148 isolates tested were ciprofloxacin resistant (resistant=MIC=4mg/L). Similarly, based on these criteria, there were no isolates resistant to cefotaxime (resistant=MIC>2mg/L).

International Comparative Analysis

Data from RIVM for the first nine months show substantial geographic variation in resistance throughout the countries participating in the project.

S.aureus:

A previous MRSA study has shown that there was a decreasing incidence of MRSA from South to North across Europe[1]. The present study shows that Ireland has a higher incidence of MRSA than her Northern European neighbours (for example, Denmark, Holland, Sweden or Germany). Unfortunately, EARSS data were not available for the France[2]. Comparing data from neighbouring countries is helpful, especially comparisons with countries with a lower incidence of MRSA. Reviewing MRSA infection control practices, antibiotic policies, MRSA strain types and resources available for infection control purposes in these countries may help countries with higher incidences of MRSA target areas where resources could be concentrated to best effect. The recent development of a strategy to combat antimicrobial resistance in Ireland should provide direction in this regard[3].

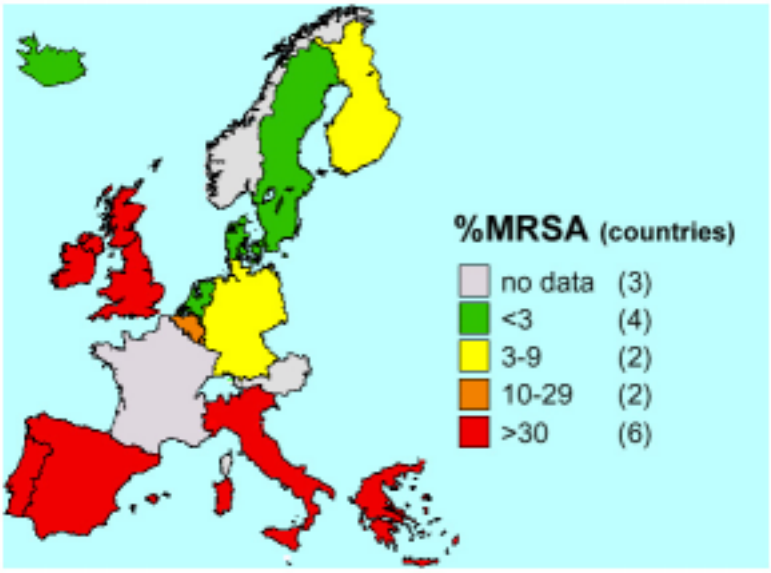


Figure 9: Map illustrating the distribution of MRSA in EARSS countries in 1999.

S.pneumoniae

In the US, a recent publication showed penicillin resistant *S.pneumoniae* (PRSP) to account for 29.5% of isolates[4]. Within this percentage, 17.4% would be classed as "intermediately" resistant (MIC=0.1 to 1.0mg/L) and 12.1% "fully resistant" (MIC≥2mg/L). This study used a similar case definition as the EARSS project (isolates from normally sterile sites). Data from Ireland showed all isolates were in this intermediate resistant category and none in "fully" resistant category.

In Japan, it is reported by Cole[5] that 65% of *S.pneumoniae* could be classed as non-susceptible. Closer to home, European rates show wide geographic variation. Nasopharyngeal carriage of PRSP in France was estimated to be about 29% in one study[6]. High levels of carriage have implications for interindividual spread. Finland[7] reports a rate of 4.7% for PRSP, 0.7% of these being fully resistant.

For *S.pneumoniae*, the distribution around EARSS participating countries appears to be as diverse.

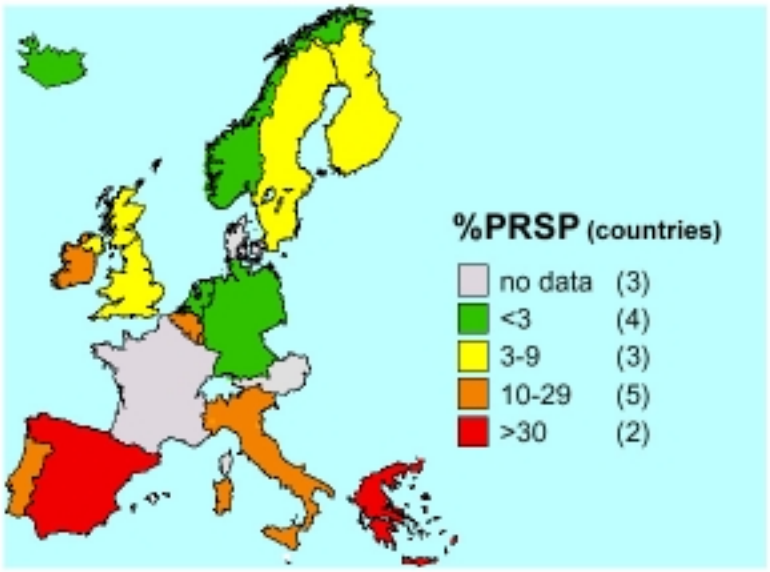


Figure 10: Map illustrating the distribution of PRSP in EARSS countries in 1999.

Two aspects of the EARSS project should be highlighted in order to allow valid appraisal of the results presented in this report. Data collection in EARSS is focussed on the major hospitals in Ireland and many are tertiary care hospitals. The results cannot be a full reflection of the situation with MRSA in Ireland. Secondly, the majority of isolates in 1999 would have been received from one health board area, Eastern Health Board. The results may more accurately reflect the situation there. An expansion of the surveillance system to other hospitals in Ireland would provide a more accurate and valid representation. Consistent, ongoing and systematic collection of data on antimicrobial resistance is essential to evaluating any success in efforts to reduce resistance in these organisms in Ireland.

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10. Publications:

There is a desire among professionals managing disease in Ireland, for a national bulletin or publication. Regional publications have shown value in this regard but are local and ad hoc in their organisation. Such a publication would prove a valuable tool in communication of vital, timely information between professionals in diverse disciplines in Ireland and between health board regions. It is a key element of the feedback to NDSC's partners at local and regional level. Ireland is one of the few countries in the European Union without such a national publication. From early 2000, NDSC propose to produce a monthly national publication to be distributed to a diverse audience.

The production of a 4-page bulletin in this timescale will prove to be very resource intensive. It will be entitled "EPI-INSIGHT" (ISSN 1393-9548). It will commence distribution in Summer 2000. Communications will be as efficient as possible (electronic). NDSC has assembled a dynamic team to act as an Editorial Committee, with representatives from general practice, microbiologists/virologists, medical laboratory science and public health.

In 1999 NDSC purchased a desk-top publishing package – PageMaker 6.5+. Training was provided in the use of the software. Time and resources have been used to investigate tentative layouts for the publication. Some articles have been solicited and received. An initial mail shot to over 500 recipients in Ireland and abroad will be accomplished by electronic transmission of PDF file and postal distribution. It is intended that the publications at NDSC follow a style to give consistency and recognisability to the organisation. It will utilise high quality graphics, Geographical Information Systems and web based tools.

11. Information Technology:

Information is the core function of NDSC. The activities of NDSC can be summarised as the collection of data, the addition of value by analysis, and the reporting of the information obtained.A number of developments have been carried out to support these activities.

Collection and Storage of Information

A local area network has been installed within NDSC to facilitate the sharing of information and other resources. This has also facilitated the implementation of backup procedures to safeguard data.

Internet access has been enhanced by the installation of an ISDN router whilst at the same time protecting the security of the NDSC network by the installation of a firewall and anti-virus software.

Email within NDSC and to its external partners has been facilitated by the installation of an email server. This has enabled incoming emails to be scanned for viruses and has also enabled the introduction of a standardised format for email addresses.

Analysis and Presentation of Information

There has been a significant investment in both hardware and software to enable enhanced analysis and presentation of information. This software includes desktop publishing software to produce the monthly NDSC bulletin and other NDSC reports. This software also produces these documents in a form available for downloading from the Internet.

Software for data processing, and graphical representation has been obtained, including geographical information system software.

NDSC Website

The world wide web is a valuable tool for communication, national and international, with the healthcare community and the general public. NDSC launched its website (www.ndsc.ie) in April of this year and is in the process of expanding the content of this site. NDSC will also shortly implement a content management system which allow responsibility for areas of the website to be devolved whilst maintaining the integrity of the site.

Administrative Support

IT is also playing a significant role in supporting the administrative tasks associated with the running of NDSC. A human resources management software package has been purchased to facilitate the administration of staff. Project management software has been acquired to assist the management of projects being undertaken by NDSC and its partners.

Ongoing IT developments

A major IT undertaking that is under development is the Computerised Infectious Disease Reporting system (CIDR). This will eventually be the principal channel by which NDSC will obtain its core data. NDSC has engaged external business analysis/IT consultants to assist in the identification of the information needs of NDSC and its partners as Phase 1 of the CIDR project. This will result in the identification of the functional requirements for this system and the preparation of a request for proposal. It is envisaged that this process will result in a pilot scheme being tested (Phase 2) and eventually rolled-out nationally (Phase 3).

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