EPI-INSIGHT

IONAD NAISIUNTA FAIRE GALAIR

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IN THE NEWS!

Outbreak of Leptospirosis in Eco Challenge 2000 competitors

Eco Challenge 2000 took place in Sabah, Malaysian Borneo in August/September. It attracted 312 athletes from 26 countries including the USA, UK, Ireland, Canada, Australia, the Netherlands, China and Malaysia. This race is held yearly and involves teams of men and women participating together in jungle trekking, canoe paddling, canyoneering, open water swimming, mountain biking, scuba diving, and caving.

On September 13th 2000 CDC issued an alert about a probable leptospirosis outbreak associated with this year's race[1]. Eleven people from the UK and Ireland are known to have suffered with acute febrile illness since taking part in the race, five of which have tested positive on ELISA for leptopirosis. Typing at the Leptospira Reference Unit in Hereford has identified *Leptospira hebdomadis, Leptospira bataviae, Leptospira icterohaemorrhagiae, Leptospira australis, Leptospira grippotyphosa,*and *Leptospira xakoebing* on microscopic agglutination testing (MAT). NDSC is collaborating with the NVRL, CDC, Atlanta, CDSC Wales and the Leptospira Reference Unit, Hereford Public Health Laboratory in the outbreak investigation.

Leptospirosis is found worldwide but is most common in temperate or tropical climates. It is an occupational hazard for many people who work outdoors or with animals e.g. farmers, sewer workers, vets, dairy farmers or military personnel. It is a recreational hazard for those who participate in camping or outdoor sports such as canoeing, swimming and white-water rafting in contaminated lakes and rivers. Leptospirosis is caused by bacteria of the genus *Leptospira* and is usually transmitted to humans by exposure to water, food or soil contaminated with the urine of infected animals. This may happen by swallowing contaminated food or water or through skin contact especially with mucosal surfaces such as the eyes or nose or with broken skin. It may take as long as one month for symptoms of illness to develop. Symptoms of leptospirosis include high fever, severe headache, chills, muscle aches and vomiting and may also include jaundice, red eyes abdominal pain, diarrhoea or a rash. In rare instances, severe disease can result in kidney or liver failure or meningitis. Illness lasts from a few days to 3 weeks or longer. Treatment is with doxycycline or penicillin G.

1. Public Health Dispatch:Outbreak of acute Febrile Illness among participants in Eco Challenge Sabah 2000 Malaysia, 2000. *MMWR*;49:816-817

Ebola Haemorrhagic Fever Outbreak in Uganda

Recently, an outbreak of viral haemorrhagic fever (VHF), caused by the Ebola virus, was confirmed in Uganda by the World Health Organisation. The outbreak occurred in the Gulu district (300km north of Kampala). As of October 29th, 211 suspected cases have been reported. There have been 72 deaths. The exact origin of Ebola virus remains unknown. According to CDC, researchers believe the virus is zoonotic (animal borne)[1]. Until now, Ebola haemorrhagic fever had been reported from Sudan [1976], Zaire (now Democratic Republic of Congo) [1995] and Gabon [1996/7]. The virus can be transmitted in several ways, including direct contact with blood/secretions of an infected person. Nosocomial spread can also occur. Within a few days of becoming infected with Ebola virus, there may be a high fever, stomach pain, rash and diarrhoea; and within one week there may be chest pain, shock, internal and external bleeding and death. Some people recover but case fatality rates vary from 70-80%. ELISA tests are available to confirm infection. Given the ease of international travel today, all countries should have the capability to perform diagnostic tests and employ practical VHF isolation precautions. To this end, the Scientific Advisory Committee (VHF Subcommittee) of the National Disease Surveillance Centre drafted a document "The Management of Viral Haemorrhagic Fever infections in Ireland". This consultation document is available on the NDSC website. Unless travellers go to Gulu in Uganda and are caring for ill individuals, the risk of acquiring Ebola haemorrhagic fever is small.

1. CDC: http://www.cdc.gov/ncidod/dvrd/spb/mnpages/dispages/ebola.htm

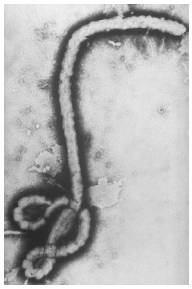

Figure 1: Transmission Electron Micrograph of Ebola virus (courtesy of PHIL, CDC)

Pneumococcal Disease – the Challenge of Penicillin Resistance

Introduction

Streptococcus pneumoniae, also known as the pneumococcus, is an important and common pathogen responsible for community-acquired pneumonia, meningitis, bacteraemia, acute exacerbations of chronic bronchitis and emphysema, and otitis media. Most studies indicate that the pneumococcus is responsible for two thirds of cases of community-acquired pneumonia and with an increasingly elderly population, this bacterial pathogen is likely to acquire increasing significance.[1] Although this bacterium may be carried in the upper respiratory tract as part of the normal flora in a minority of individuals, this may be episodic and other factors are usually required to cause invasive disease such as pre-existing viral illness or a break in natural defences, e.g. a skull fracture leading to meningitis. A recent review of pneumococcal bacteraemia has indicated that mortality has not changed significantly in recent years, with about 20% of patients dying, but that patients presenting during the colder months carry a significantly higher case fatality.[2] Preventive strategies include pneumococcal vaccination, and conjugate vaccines may improve protection in at-risk groups in the future, including young infants.

Treatment strategies and penicillin resistance

Hitherto the drug of choice for pneumococcus has been benzylpenicillin as most isolates have been very susceptible with minimum inhibitory concentrations (MICs) of 0.06 mg/L or less. However, in the last decade, pneumococcal isolates that are intermediate or fully resistant to penicillin have been described and have become increasingly prevalent in many countries. The mechanism of penicillin resistance is through alteration in the target of penicillin action, namely penicillin-binding proteins. The degree of change in these penicillin-binding proteins correlates well with the magnitude of the increase in the penicillin MIC which is a quantitative measurement of penicillin susceptibility.[3] Table 1 outlines the prevalence of penicillin resistance in a number of countries, the figures for the Republic of Ireland represent the statistics for 1999 as revealed in European Antimicrobial Resistance Surveillance System (EARSS).

Whilst there are some differences in the populations surveyed, the isolates examined and the criteria used to assess penicillin susceptibility, the prevalence of full resistance, i.e. isolates with an MIC of ≥2 mg/L ranges from Germany with less than 1% to the USA and Canada, where it is 16%.[4,5,6,7] Indeed in some countries such as Palestine, high level penicillin resistance is the norm, consequently other options for treatment must be used in empirical therapy before susceptibility results are available. Figure 1 illustrates European data from the EARSS study.

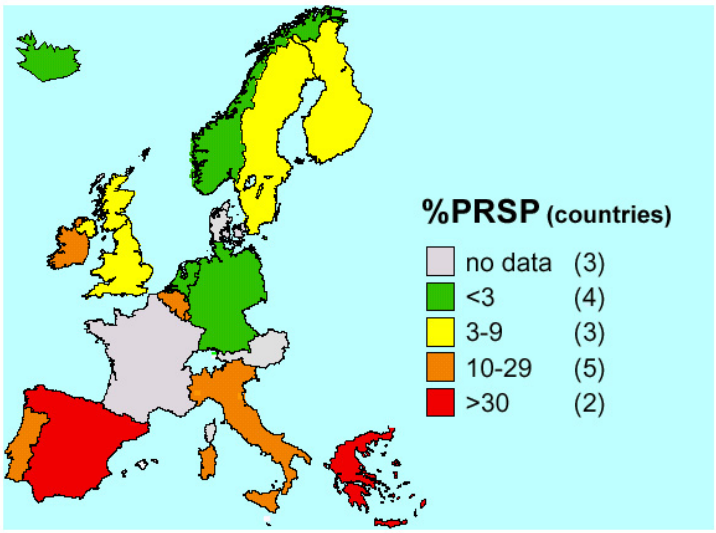

Figure 1: Distribution of PRSP in Europe based on EARSS data from 1999.

Reduced susceptibility to other antibiotics commonly occurs in association with penicillin resistance although other β-lactam agents such as third generation cephalosporins remain clinically effective. In the United States of America, 19% of strains are resistant to macrolides such as erythromycin, and 14% of strains are resistant to chloramphenicol, up until recently the drug of choice for the empirical treatment of meningitis.[3] Although there is not always a direct correlation between penicillin resistance and adverse outcomes across a range of infections, it is generally agreed that agents such as cephalosporins or vancomycin should be used to treat life-threatening infections such as meningitis and bacteraemia especially where there is high level penicillin resistance. There is some concern that in the near future a minority of strains will be susceptible to benzylpenicillin, a cheap and safe antibiotic, and that with increasing multi-antibiotic resistance, there will be fewer options for therapy.

Conclusions

Ireland, like many other countries, is experiencing significant problems with antibiotic resistance amongst strains of pneumococci responsible for bacteraemia and meningitis. Although the prevalence is lower amongst the strains received during 2000 (to date), the figures for 1999 indicate that we have a higher prevalence than many other European countries such as the UK, Germany and Scandinavia. Strat-

		Penicillin susceptibility		
Country	Year	Sensitive	Intermediate	Resistant
Republic of Ireland*	1999	82%	18%	0%
USA and Canada[7]	1997	56%	28%	16%
Palestine[6]	1997	12%	20%	68%
Germany[4#]	'92 – '98	96%	4%	0.2%
Northern Ireland[5]	1995	89%	7%	4%
# Isolates from adults only		*EARSS data (bacteraemia isolates)		

Table 1: International comparison of isolates of Streptococcus pneumoniae *susceptibility to penicillin.*

egies important in helping to control the emergence of spread of these strains include continuing surveillance incorporating molecular analysis of strains to determine circulating clones, better and more restricted prescribing, especially in the community, and the more widespread use of available pneumococcal vaccines. In some parts of the world routine pneumococcal vaccination is now recommended for all individuals over the age of 65 and not just those with chronic underlying diseases. Finally, the development and use of conjugate pneumococcal vaccines in the future may improve protection and be appropriate for use in young infants where a significant proportion of invasive disease occurs[8].

References

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4. Abb J, Kommerell M, Breuninger H. Five-years surveillance of antimicrobial resistance of *Streptococcus pneumoniae* in a large south western German community hospital. *Clinical Microbiology and Infection* 1999; 5: 387-388.

5. Goldsmith CE, Moore JE, Murphy PG. Prevalence of antibiotic resistance in pneumococci in Northern Ireland. *British Medical Journal* 1996; 313: 820

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8. Klein DL, Eskola J. Development and testing of *Streptococcus pneumoniae* conjugate vaccines. *Clinical Microbiology and Infection* 1999; 5: 4S17-4S28.

Prof Hilary Humphreys, Beaumont Hospital/RCSI

Mr Dominic Whyte, NDSC

Pneumococcal Vaccine:

Pneumococcal vaccine, 23 valent polysaccharide vaccine, has been available in Ireland since 1985. It is recommended for use in persons aged 65 years and over and persons over two years who are at increased risk of pneumococcal disease and its complications (those with asplenia, severe dysfunction of the spleen including surgical splenectomy; chronic renal disease and nephrotic syndrome; chronic heart, lung or liver disease, including cirrhosis; diabetes mellitus, sickle cell disease; immunodeficiency or immunosuppression due to disease or treatment including HIV infection at all stages). The National Immunisation Committee of the Royal College of Physicians of Ireland gives doses, contraindications and precautions in the booklet "Guidelines to Immunisation in Ireland". The Centers for Disease Control (CDC) in the US recently published the recommendations of their Advisory Committee on Immunisation Practices in relation to pneumococcal vaccine. A 7-valent pneumococcal conjugate vaccine is recommended for routine use in all children aged between 2 and 23 months, in addition to the usual risk groups[1].

1. CDC Advisory Committee on Immunisation Practices (ACIP). Preventing Pneumococcal Disease Among Infants and Young Children. *MMWR* 2000; 49: RR-9.

EARSS *S.pneumoniae* data 1999:

In the European Antimicrobial Surveillance System (EARSS), isolates of *Streptococcus pneumoniae* (*S.pneumoniae*) from blood culture and cerebrospinal fluid are examined. Disc diffusion data from 12 centres across Ireland were collected every quarter. Further tests were carried out on all isolates at the Royal College of Surgeons in Ireland (RCSI) and Beaumont Hospital. These tests included determination of minimum inhibitory concentration (MIC) to selected antimicrobials.

In the first full year of data collection (1999), information on 159 isolates of *S.pneumoniae* was collated. Twenty-nine (18.2%) of these isolates had reduced susceptibility to penicillin (intermediately resistant). Fifteen percent of isolates were resistant to erythromycin and 1.1% were resistant to tetracycline. No isolates were resistant to cefotaxime.

The distribution of the samples received through the year is illustrated in figure 1. It follows the expected pattern of pneumococcal infection in humans, high in winter months and lower in summer months.

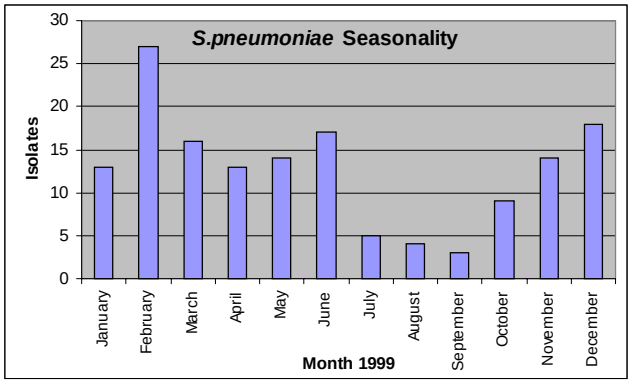

Figure 1: Monthly dist. of isolates of S.pneumoniae, *EARSS 1999.*

Gender & Age Distribution: Gender was assigned in 98% of cases of *S.pneumoniae* notified. Of these cases, 56.4% were male and 43.6% were female. Age was assigned in 94% of cases. The age distribution for *S.pneumoniae* is shown in figure 2. Sixty-five percent of isolates were from patients over 50 years.

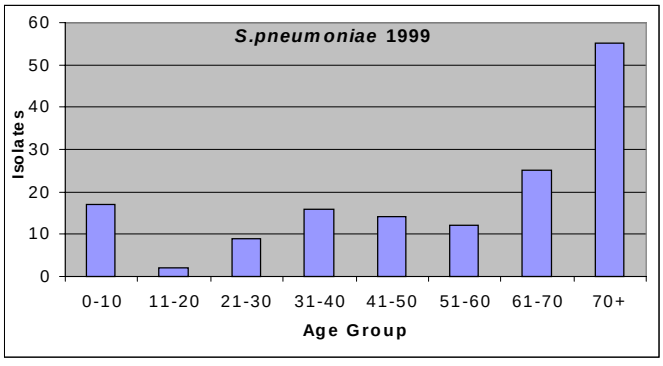

Figure 2: Age Dist. of cases with S.pneumoniae *infection, EARSS 1999.*

Analysis of *S.pneumoniae* at RCSI/Beaumont revealed penicillin E-test data for 143 isolates. Thirty isolates had an MIC of >0.06mg/l. No isolate with an MIC>1mg/l for penicillin was recorded.

We thank the participating EARSS centres for sending in the isolates and to Peadar Clarke and the RCSI/Beaumont team for their work on these isolates.

Dr O Murphy & Mr D Whyte, NDSC

Influenza Surveillance

The National Disease Surveillance Centre is working with partners in the Departments of Public Health, the Irish College of General Practitioners and the National Virus Reference Laboratory to establish an influenza surveillance system this year.

Surveillance will cover two aspects, namely, **clinical data;** which will provide epidemiological features and the impact of influenza infection; and **virological data**; which will allow for confirmation of cases, identification of current circulating strains and detection of novel viruses. Surveillance is required to document not only a novel virus, which can herald a pandemic, but routine surveillance of minor changes in the virus structure (antigenic drift), which leads to annual epidemics/outbreaks and determines the composition of the annual vaccine.

Twenty computerised sentinel general practices have been selected, representing all the health boards, to report on a weekly basis, the number of patients seen with influenza-like illness per 100,000 population. Influenza-like illness for the purpose of the study is defined as the sudden onset of symptoms with a temperature of 38°C with at least two of the following: headache, myalgia, sore throat or dry cough. The practices are also asked to return throat and nasopharyngeal swabs on two patients in whom influenza-like illness has been diagnosed on a weekly basis to the National Virus Reference Laboratory. Aside from the samples reported on from the sentinel practices, the Virus Reference Laboratory provides data on specimens analysed from other sources such as hospitals.

Work is already in progress in each of the Departments of Public Health in compiling data from a number of sources including sentinel hospitals, schools and nursing homes. The sentinel hospitals have been asked to supply information on a weekly basis on the number of admissions due to respiratory disease which can then be expressed as a proportion of the overall number of admissions. It is proposed that a primary and a secondary school located in close proximity to the sentinel practices would voluntarily report every week on the number of pupils absent on any one day for any reason during influenza season. Nursing homes will report when more than 10% of residents become ill with influenza-like illness. The combination of these sources will allow a picture to be formulated by region of influenza activity.

It is envisaged that the sentinel general practice system will expand to cover more of the population, with expansion of the National Virus Reference Laboratory's facilities and enhancement of regional reporting.

For further information on the above surveillance scheme, please contact Dr. Niamh Mullins, NDSC (niamh.mullins@ndsc.ie)

CIDR Update

NDSC would like to remind partners in disease surveillance that the draft documents outlining the functional requirements for the Computerised Infectious Disease Reporting (CIDR) system are available from NDSC and at the website for comment.

http://www.ndsc.ie/cidr/

Recall of Medeva Oral Polio Vaccine

As a precautionary measure, the Irish Medicines Board recalled any remaining stock of the Medeva oral polio vaccine (OPV), on Friday 20th October 2000[1]. This followed a statement by the Chief Medical Officer of the Department of Health-UK withdrawing the use of this vaccine after it was found that it had breached European guidelines[2]. Following on from the Irish Medicines Board's advice, the Department of Health and Children (DoHC) also issued advice. The DoHC advised health boards, hospitals and general practitioners not to use Medeva OPV and to return any stocks to the suppliers[3].

Medeva OPV was manufactured using a growth medium containing material of UK-sourced bovine origin (foetal calf serum). This specifically breached the 1999 European guideline, which makes clear that oral medicinal products should not use bovine material in the manufacturing process from countries in which there are known cases of BSE. This guidance has been formulated on a precautionary basis and is expected to come into law in March 2001[2].

The first guidance to be produced on this subject, issued by the Committee on Safety of Medicines (UK) in 1989, asked that UK-sourced bovine materials should not be used in the manufacture of injectable medicinal products. The implementation of this guidance by the Medicines Control Agency in the UK (MCA) led to phasing out during the early 1990s of vaccines, which had used UK-sourced bovine material in their manufacture. The MCA had requested and received assurances from drug companies that this guidance was being implemented. In the case of Medeva these assurances have proved inaccurate. The MCA has sought and received confirmation from each manufacturer that there is no material of UK-sourced bovine origin used in the manufacture of other vaccines in current use[2].

The MCA has carried out a risk assessment and can advise people who have received the vaccine in the past that the risk associated with Medeva OPV is incalculably or exceedingly small[2]. This conclusion is based on the facts that

1. The breach is of a guidance that has been formulated on a precautionary basis

2. Under the European guidance foetal calf serum is in category IV i.e. no detectable infectivity

3. Processes used in manufacturing are designed to remove unwanted protein such as foetal calf serum.

SmithKline Beecham currently supplies the OPV in use in Ireland. This vaccine has been confirmed to contain non-UK-sourced foetal calf serum. The DoHC strongly advise parents to continue to have their children immunised against polio, which is a very serious disease[3].

[1]Media Release – Recall of Medeva oral polio vaccine. Irish Medicines Board, 20 October 2000.

[2]CMO's urgent communication CEM/CMO/2000/12.

http://www.doh.gov.uk/cmo

[3]Department issues advice regarding polio vaccine.

http://www.doh.ie/pressroom

Salmonella Monthly Report (September):

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	8	1	6	3	1	1	7	2	29
S.Enteritidis	12	0	0	1	4	0	5	4	26
S.Blockley	1	0	0	0	0	0	0	0	1
S.Bredeney	0	0	0	1	0	0	0	0	1
S.Hadar	1	0	1	0	0	0	0	0	2
S.Schwarzengrund	2	0	0	0	0	0	0	0	2
S.Virchow	0	0	0	0	0	0	0	1	1
Total	24	1	7	5	5	1	12	7	62