EPI-INSIGHT

IONAD NAISIUNTA FAIRE GALAIR

DISEASE SURVEILLANCE REPORT OF NDSC, IRELAND

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National Disease Surveillance Centre, Sir Patrick Dun's Hospital, Lr. Grand Canal St, Dublin 2, Ireland

Tel: +353 (0)1 6617346

Fax: +353 (0)1 6617347

info@ndsc.ie

www.ndsc.ie

IN THE NEWS!

Leptospirosis

Leptospirosis is a notifiable disease in Ireland. Some of the difficulties in establishing the true incidence of leptospirosis in Ireland are outlined in this issue. The table below summarises the discrepancies between clinical case notification and laboratory diagnosis. Raising awareness amongst clinicians and encouraging notification of cases can contribute to effective surveillance, which is needed for swift identification of cases and possible sources of infection. Detailed clinical and risk factor information can then lead to the formulation of effective and appropriately targeted public health intervention strategies. Mild infections can be treated with oral doxycycline with more severe infections generally requiring intravenous penicillin.[1] The efficacy of pre-exposure chemoprophylaxis on clinical symptoms and mortality attributed to leptospirosis using oral doxycycline 200mg once a week has been demonstrated.[2] Persons travelling to areas where leptospirosis is endemic or epidemic and who participate in high risk exposure activities are at increased risk for leptospirosis. More discussion on the potential benefits from pre-exposure chemoprophylaxis is needed.

Dr Alan Smith, NDSC.

Year	Laboratory Confirmed*	Clinical Notifications**
1997	24	8
1998	28	12
1999	20	6
2000	18	7

* PHLS Leptospirosis Reference Laboratory, UK / NVRL
** Department of Health & Children / NDSC, Ireland

1. Tappero J, Ashford D, Perkins BH, eds. Leptospirosis. In: Principles and practice of infectious diseases. 5th ed. New York: Churchill Livingstone, 1998.
2. Takafuji E, Kirkpatrick J, Miller R, Karwacki J, Kelley P, Gray M et al. An efficacy trial of doxycycline chemoprophylaxis against leptospirosis. *N Engl J Med* 1984;**310**:497-500

Launch of "Strategy for Control of Antimicrobial Resistance in Ireland - SARI"

The Strategy for Control of Antimicrobial Resistance in Ireland (SARI) is due to be launched on 19th June 2001. The document was prepared by a multi-disciplinary committee, under the auspices of the Scientific Advisory Committee of the NDSC. The document outlines the scale of antimicrobial resistance in Ireland and highlights deficiencies in currently available data. The committee makes a number of recommendations to deal with this problem in Ireland. These include improved surveillance of antimicrobial resistance and antimicrobial usage, improved infection control services, strategies to encourage appropriate prescribing of antimicrobials in the community and hospital and educational strategies for health care workers, patients and the general public.

Ireland has a high rate of antimicrobial resistance compared with other northern European countries. Implementation of the SARI recommendations will help combat the problems of infection and antimicrobial resistance in Ireland. This should ultimately lead to considerable benefit to patients, with improved care, reduced morbidity and mortality related to infections with resistant organisms, as well as significant financial savings to the health service.

Dr Olive Murphy & Dr Robert Cunney, NDSC.

Imported Cases of Polio in Bulgaria

The World Health Organisation announced that poliomyelitis has been diagnosed in Europe for the first time since 1998. The virus was detected in two Romany children in Bulgaria. Although of the same ethnic group these cases were geographically separated (90 km), suggesting circulation of wild poliovirus in communities. Genetic sequencing has identified the infectious agent as poliovirus type 1 of a subtype associated with northern India.[1] Poliovirus was last identified in Europe in November 1998, when it was found in a Turkish province. The occurrence of wild poliovirus circulation in Bulgaria is a setback for the European region that was on track for certification of poliomyelitis eradication. A region is certified as polio free when there has been no circulation of wild poliovirus in the region for 3 years. In Ireland, the last case of poliomyelitis was reported in 1984. To maintain our polio free status it is important to immunise all children under 15 years of age resident in Ireland who have not been previously immunised or who have incomplete immunisation histories. To ensure that no case of polio goes undetected in Ireland, NDSC urges clinicians to report all cases of acute flaccid paralysis (AFP) in children less than 15 years to the National Virus Reference Laboratory, so that the necessary steps can be taken to ensure that correct specimens are collected and analysed.[2]

1. Eurosurveillance Weekly, 2001, http://www.eurosurv.org/2001/010524.html
2. Epi-Insight, July 2000, http://www.ndsc.ie/publications/epi_insight/0007ei.pdf

Leptospirosis in Ireland

Leptospirosis is a zoonotic disease of worldwide distribution, caused by spirochaetes of the genus *Leptospira*.The two main species within the genus are *Leptospira biflexa*, which is non-pathogenic, and *Leptospira interrogans*, which is pathogenic. Within each of these two groups there are many serotypes.

Risk Factors:

Leptospira can survive in fresh water for many months and in seawater for up to 24 hours, but dry climate, prolonged sunlight and chemical pollution tend to kill them.[1] They infect a variety of wild and domestic animals that excrete the organism in their urine. Humans are infected through direct contact with infected animals or through exposure to fresh water or soil contaminated by infected animal urine. Person-to-person transmission is extremely rare, but has been described. People of all ages are susceptible to infection, but most cases occur in adult men. The peak incidence is in summer and early autumn. Leptospira enter the body through cuts; abraded and softened, waterlogged skin; mucous membranes or conjunctivae; aerosol inhalation of microscopic droplets; and possibly ingestion.[2]

Occupational exposure (farmers, vets and abattoir workers) and recreational exposure (swimmers, canoeists, wind surfers and water skiers) is common. As a result of close contact and intensive agricultural practices, farm and pet animals act as important reservoirs for human infection. They act not only as maintenance hosts, e.g. serotype *L. hardjo* in cattle, *L. pomona* in pigs, but also act as amplification hosts for rodent-maintained serotypes such as *L. icterohaemorrhagiae* and *L. grippotyphosa*.[3]

Symptoms:

The severity of leptospiral infection ranges from subclinical illness to two clinically distinct syndromes. These syndromes present as:

a) a self limiting systemic illness seen in roughly 90% of infections, and,

b) Weil's Disease, a severe, potentially fatal illness manifested by any combination of renal failure, liver failure and pneumonitis with haemorrhagic complications.[2] The incubation period is usually 7 to 12 days followed by a biphasic illness. The first phase presents as an acute infection with a leptospiraemia and sudden onset of fever, rigors, severe headache and myalgia. Abdominal pain, vomiting and diarrhoea, and respiratory symptoms are less common. Within 4-7 days, leptospira disappear from the blood, symptoms improve and the temperature settles. The return of the fever heralds the second phase, in which the symptoms are due to the patient's immune system response. Some cases present with meningitis and others develop jaundice and renal failure. Fulminating disease occurs rarely, and death results from hepato-renal failure, adult respiratory distress syndrome, cardiac arrhythmia or haemorrhage associated with extensive acute vasculitis. Death without jaundice is rare.[4] Fatality figures for patients developing severe disease have ranged from 5 to 40%. The figures for the years 1985 –1996 showed a mortality rate of 0.47/million in this country as compared to 0.05/million in England and Wales, and in Scotland 0.02/million.[5] Data from patient discharges can be compiled from the Hospital In-Patient Enquiry system (HIPE). The number of deaths with a diagnosis of leptospirosis from HIPE statistics for years 1996 – 2000, (ESRI, unpublished data), indicate a mortality rate of 0.21/million. One death from leptospirosis was recorded in 1996, 1997, 1999 and 2000 (data incomplete for 2000).

Virulence factors explaining diferences between mild, self-limiting and severe infections in humans have yet to be identified. Surface antigens may play some role, as certain serovars are usually associated with mild illness (*L. hardjo*, *L.ballum*, *L. grippotyphosa*), whereas other serovars (*L. icterohaemorrhagiae*, *L. autumnalis*, *L. australis*) are generally associated with more severe illness.[6]

Laboratory Diagnosis:

In the acutely ill patient, dark-field microscopy (on fresh urine no more than 4 hours old) may provide a presumptive diagnosis. However, this is not regularly performed as it requires experienced personnel to interpret results and the concentration of leptospira may be too low to be detected.

In the majority of cases, the initial diagnosis is made on the result of rapid serological tests which include haemagglutinin and ELISA IgM methods. These are screening assays and the results should be taken in conjunction with the patients clinical presentation, as cross-reactions are common, (giving false positives) and samples taken too early in infection may be falsely negative. A Reference Laboratory should confirm any positive result in a screening assay. The reference standard serology test for the detection of leptospiral antibodies is the microscopic agglutination test (MAT), using live organisms. This test can usually identify the infecting sergroup. It is highly sensitive and specific, but it is time-consuming and hazardous to perform – using live cultures of the organism – and so is only carried out in Reference Centres.[7]

Isolation of leptospira from human clinical specimens remains the gold standard for the diagnosis of leptospirosis, but as this can be difficult and can take up to 16 weeks even in experienced laboratories, other methods are normally used.

Epidemiology in Ireland

The true incidence of leptospirosis in Ireland is difficult to ascertain for various reasons. Subclinical infection is common. Of the patients who do attend a doctor, a large proportion present with a flu-like illness that resolves without treatment in a couple of weeks. Even when cases of leptospirosis are confirmed serologically, they may not be notified, even though, at present, doctors have a statutory requirement to do so under the Infectious Disease Regulations 1981. The disease in Ireland occurs more frequently in the second half of the year, as demonstrated in the graph in Figure 1. This corresponds with public complaints of rodent sightings.[5]

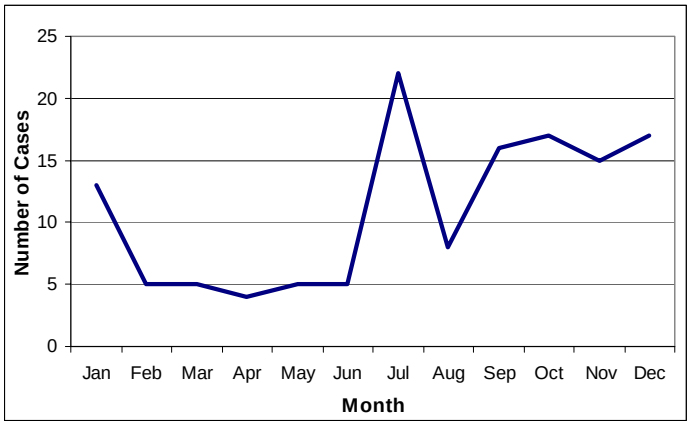

Figure 1: Seasonal trends of leptospirosis in Ireland (reproduced with permission of the PHLS Communicable Disease Surveillance Centre © PHLS).[5]

Testing for leptospirosis is done in four centres around Ireland using either an ELISA for IgM antibodies or a haemagglutination test. Specimens that are positive on the initial testing are usually referred to the Leptospirosis Reference Centre in Hereford, UK, for MAT test to confirm the original result and to try to identify the serotype. Figures for Ireland are given in Table 1.

Table 1: Cases of leptospirosis in Ireland, confirmed by UK Reference Centre 1997-2000.

Year	*L. ictero.*	*L. hardjo*	Undeterm.	Other	Total
1997	5	7	12	0	24
1998	8	6	14	0	28
1999	4	1	14	1	20
2000	6	9	1	2	18

In the National Virus reference Laboratory (NVRL), between 1500-1600 specimens are tested a year, with about another 500 specimens tested in the other centres. The numbers of positive sera per year (1990-2000) are given in Table 2. It would appear that the percentage positive, and serovar data for the NVRL are reflected around the country (personal communication). There has not been a case of *L. canicola*, which is associated with dogs, identified since 1985. This is probably be due to introduction of a vaccine for dogs. A vaccine is also available for cattle, but it is optional, and so there is still a large reservoir of *L. hardjo*.

Table 2: Number of positive sera for leptospirosis detected in NVRL, 1990-2000.

Year	*L.ictero*	*L.hardjo*	Serotype Undeterm	Total
1990	6	1	5	12
1991	8	4	3	15
1992	5	3	10	18
1993	5	6	19	30
1994	3	2	14	19
1995	4	3	9	16
1996	2	6	15	23
1997	4	4	10	18
1998	5	5	10	20
1999	2	1	10	14*
2000	5	4	1	12**

*One serovar *L.ballum* **One servar *L.autumnalis* and one serovar *L.saxkoebing* **NVRL data only.**

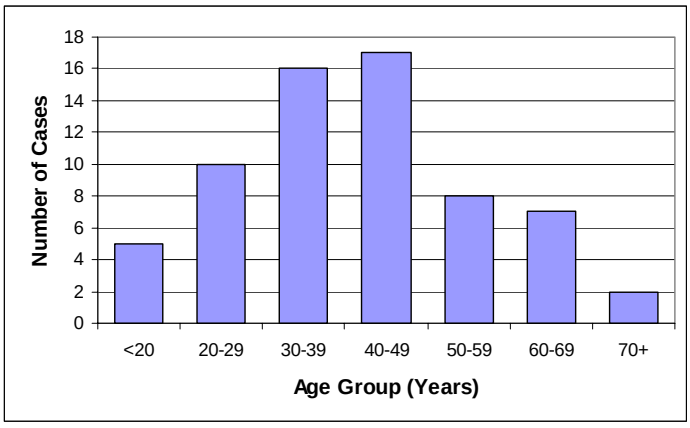

Figure 2: Age distribution of cases of leptospirosis detected in NVRL, 1997-2000

Figure 2 gives the ages of the cases for the years 1997 to 2000. In these cases there were 61 males and only 3 females, which emphasises the fact that the infection is usually found in males of working age.

Key Messages:

- Leptospiral infection ranges from subclinical illness to two clinically distinct syndromes - a self limiting systemic illness and Weil's Disease, a severe, potentially fatal illness.
- The peak incidence of leptospirosis is in summer and early autumn.
- Occupational exposure (farmers, vets and abattoir workers) and recreational exposure (swimmers, canoeists, wind surfers and water skiers) is common.
- The infection is usually found in males of working age.
- Initial diagnosis is made on the result of rapid serological tests and the patients clinical presentation.
- Doctors have a statutory requirement to report cases of leptospirosis under the Infectious Disease Regulations 1981.

Although occupational and recreational exposure is the usual source of transmission, some recreational exposures may not be that obvious. There was a report of four cases of leptospirosis (3 males and 1 female) in the crew of a British ship docked in Hong Kong. All cases presented within 3 days of each other. The source of the infection was eventually shown to be a 'mud wrestling' competition they had taken part in on the near-by Lantau Island.[8] So be wary of the sports you engage in!

Carol Mongan FAMLS, NVRL.

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8. Lacey EJ. Leptospirosis. *J Roy Nav Med Serv* 1993; **79**:37-38

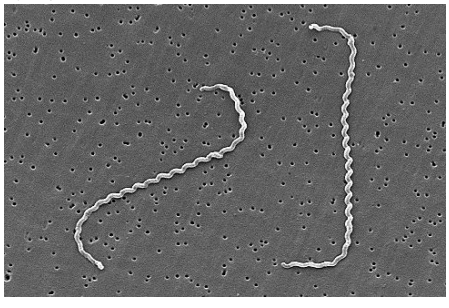

Figure 3: Scanning electron micrograph of leptospira, courtesy of Public Health Image Library, CDC (Rob Weyant and Janice Carr).

Enhanced Surveillance of Syphilis

Enhanced surveillance of syphilis in Ireland was introduced by NDSC to cover all cases of syphilis from January 2000. Increases in syphilis have been reported in the US and elsewhere in Europe. In Antwerp, in Belgium, 51 cases of syphilis were notified in the first quarter of 2001. Thirty-two cases were in men who have sex with men (MSM); 7 of these were HIV positive. Prior to this, fewer than 20 cases of syphilis were reported in Belgium each year.[1] In the Greater Manchester area, a syphilis outbreak was first recognised in 1999. By April 2001, 104 cases were identified, with the highest number of new cases being diagnosed in January 2001. The outbreak is concentrated among MSM.[2] Similar syphilis outbreaks have also been reported among MSM in Brighton, Oslo and Paris and among heterosexuals in Cambridgeshire and Peterborough.[3] In Ireland, large-scale publicity campaigns and enhanced surveillance have been coordinated by the Department of Public Health, Eastern Regional Health Authority (ERHA), Sexually Transmitted Infection (STI) services, Dublin and the National Disease Surveillance Centre (NDSC).

To date, in Ireland, 109 cases of primary and secondary syphilis have been notified to NDSC through the enhanced surveillance system. One hundred and six (97.2%) of these cases were associated with the outbreak in Dublin.

Ninety-six percent of cases were from the ERHA, see Figure 1. The remaining 4% of cases were from the Western Health Board (WHB) and Southern Health Board (SHB); only one of these cases was associated with the current outbreak among MSM.

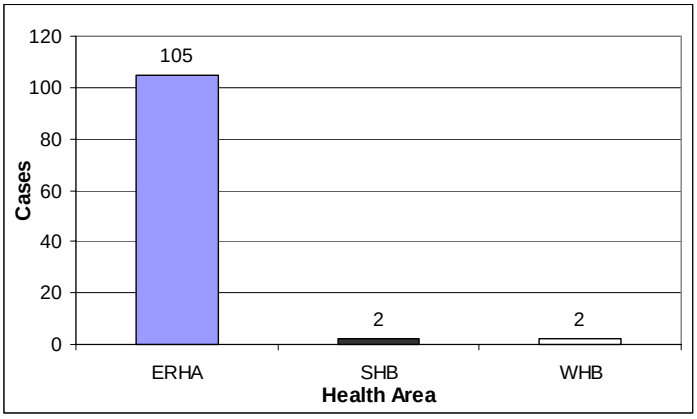

Figure 1: Geographic distribution of reported cases of syphilis (n=109).

Ninety-eight of the cases notified were male and 11 were female. Five of the female cases were non-nationals, 3 were Irish and 3 were of unknown nationality. Ninety-five percent of cases were in the 20-44 year age group.

Eighty cases were among MSM - 12 of these were bisexual. Twenty cases were reported in heterosexuals and 9 cases were of unknown sexual orientation, see Figure 2. Of the 20 cases, which were acquired through heterosexual sex, 11 were female and 9 were male.

Syphilis can facilitate the transmission of HIV. Eighteen of the 109 cases (17%) were co-infected with HIV. The highest number of new syphilis cases diagnosed during this outbreak has been between January and April 2001; highlighting the importance of maintaining increased awareness and continuing to develop relevant and appropriate interventions, particularly among MSM. Enhanced syphilis surveillance is continuing.

The authors would like to thank the Departments of Public Health, the outbreak control team, all those who provided the enhanced surveillance data and the staff in the STI services around the country.

Lisa Domegan and Dr Mary Cronin, NDSC

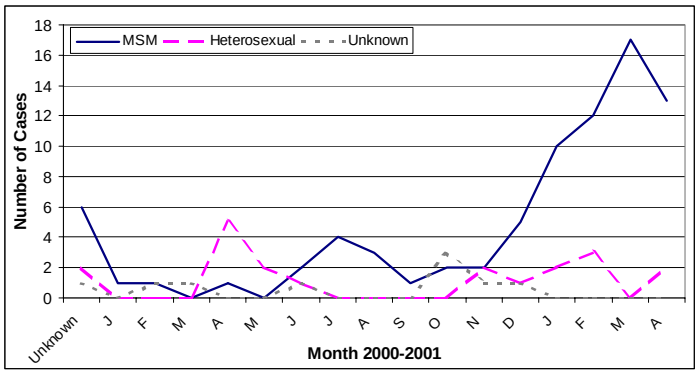

Figure 2: Number of cases of syphilis reported through enhanced surveillance by month.

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http://www.eurosurv.org/2001/010510.html
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http://www.eurosurv.org/2001/010419.html
3. Doherty L, Fenton K, O'Flanagan D, Couturier E. Evidence for increased transmission of syphilis among homosexual men and heterosexual men and women in Europe. *Eurosurveillance Weekly* 2000; **4**: 001214.
http://www.eurosurv.org/2000/001214.htm

Erratum: Foot-and-Mouth Disease (FMD) & Human Health

In the May issue of Epi-Insight it was stated that a single human case of FMD had recently been reported in the UK. This was incorrect. In the 2001 FMD outbreak there have been no confirmed human cases of FMD. The last human case confirmed in Britain occurred in 1966 during the last epidemic of foot and mouth disease [1].

1. Armstrong R, Davie J, Edger RS. Foot and Mouth Disease in man. BMJ 1967; **4**: 529-530

Salmonella Monthly Report (April 2001):

Strains are allocated to months based on the date of receipt of the isolate from the referring laboratory. These figures are provisional as work may not be finished on particular strains at the time of publication. Data are provided courtesy of Prof Martin Cormican and Dr Geraldine Corbett-Feeney, INSRL.

Health Board	E	M	MW	NE	NW	SE	S	W	Total
S.Typhimurium	4	0	1	2	0	0	3	1	11
S.Enteritidis	3	0	2	0	0	0	4	2	11
S.Dublin	0	0	0	0	0	0	1	0	1
S.Haardt	0	0	0	0	0	0	0	1	1
S.Heidelberg	0	0	0	0	0	2	0	0	2
S.Newington	1	0	0	0	0	0	0	0	1
S.Putten	0	1	0	0	0	0	0	0	1
S.Saintpaul	1	0	0	0	0	0	0	0	1
S.Stanley	1	0	0	0	0	0	0	0	1
Total	10	1	3	2	0	2	8	4	30