

## Legionnaires' Disease in Ireland

Legionnaires' disease is a statutorily notifiable disease in Ireland as defined by the Infectious Disease Regulations 1981 (S.I. No. 390 of 1981). Under the Infectious Diseases (Amendment) (No.3) Regulations 2003 (SI No. 707 of 2003), which came into effect on 1 January 2004, laboratory and clinical notification of legionnaires' disease is mandatory.<sup>1</sup> Cases should be notified to the medical officer of health in the relevant department of public health. Table 1 summarises the number of cases of legionnaires' disease notified to the Department of Health and Children and the Health Protection Surveillance Centre (HPSC) from 1994 to 2007 (2007 figures are provisional). HPSC took over responsibility for the collation of infectious diseases notifications on 1 July 2000.

*Table 1. Number of legionnaires' disease cases per million population notified in Ireland, 1994-2007*

<i>Year</i>	<i>Number of cases</i>	<i>Crude rate per million population</i>
1994	1	0.3
1995	1	0.3
1996	2	0.6
1997	6	1.7
1998	2	0.6
1999	2	0.6
2000	9	2.3
2001	3	0.8
2002	6	1.5
2003	7	1.8
2004	4	1.0
2005	9	2.3
2006	13	3.1
2007*	16	3.8

1996 population: 3,626,087

2002 population: 3,917,203

2006 population: 4,239,848

\*provisional figures

There were 67 cases of legionnaires' disease reported in Ireland during the period 2000 to 2007. There were five deaths due to legionnaires' disease during this period, giving a case fatality rate (CFR) of 7.5%. Forty-five cases (67.2%) were male, and 22 (32.8%) were female. Forty-one cases (61.2%) were travel-associated, twenty-one (31.3%) were community-acquired, and five (7.5%) were nosocomial. Fifty-seven cases (85.1%) were classified as confirmed and ten (14.9%) as probable.

The median age was 48 years, with a range from 18 to 80 years. The median age for females was 45 years and 49 years for males. The cumulative number of cases in each age group is shown in Figure 1.

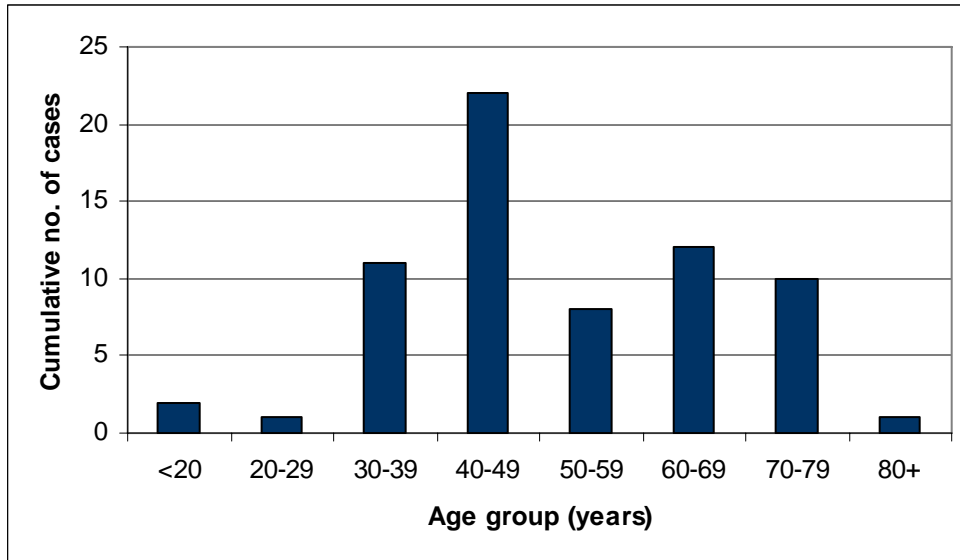


Figure 1. Cumulative number of cases of legionnaires' disease in each age group, 2000 to 2007

The peak month of notification was September (Figure 2). The main method of diagnosis was urinary antigen in fifty cases (74.6%), serology in fifteen (22.4%), culture in one case (1.5%), and the method was unspecified in one case (1.5%).

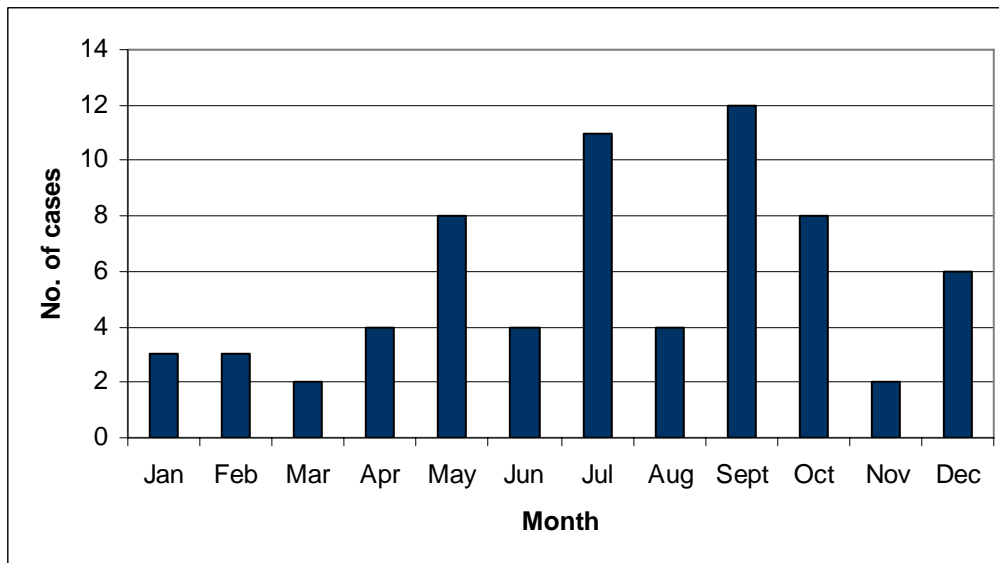


Figure 2. Cumulative number of cases by month, 2000 to 2007

### Legionnaires' Disease in Europe

Legionnaires' disease is a statutorily notifiable disease in many but not all European countries. In 2006, the overall European rate of infection was 11.2 cases per million population (based on a population of 562.7 million in 35 countries). Table 2 shows the incidence rate in various European countries in 2006.<sup>2</sup>

Table 2. Number of legionnaires' disease cases and rate per million population in various European countries in 2006

Country	Number of cases	Rate per million population
Spain	1312	30.0
France	1440	23.0
Denmark	127	23.4
Netherlands	440	26.9
Sweden	108	11.9
Scotland	42	8.2
England & Wales	544	10.3
Northern Ireland	5	2.9
<b>Ireland</b>	<b>13</b>	<b>3.1</b>
Poland	89	2.3
Turkey	5	0.1

There were 387 deaths associated with legionnaires' disease in Europe in 2006, giving a CFR of 6.2%. The majority of cases were male (61.0%). The number of cases in each age group in Europe is shown in Figure 3.

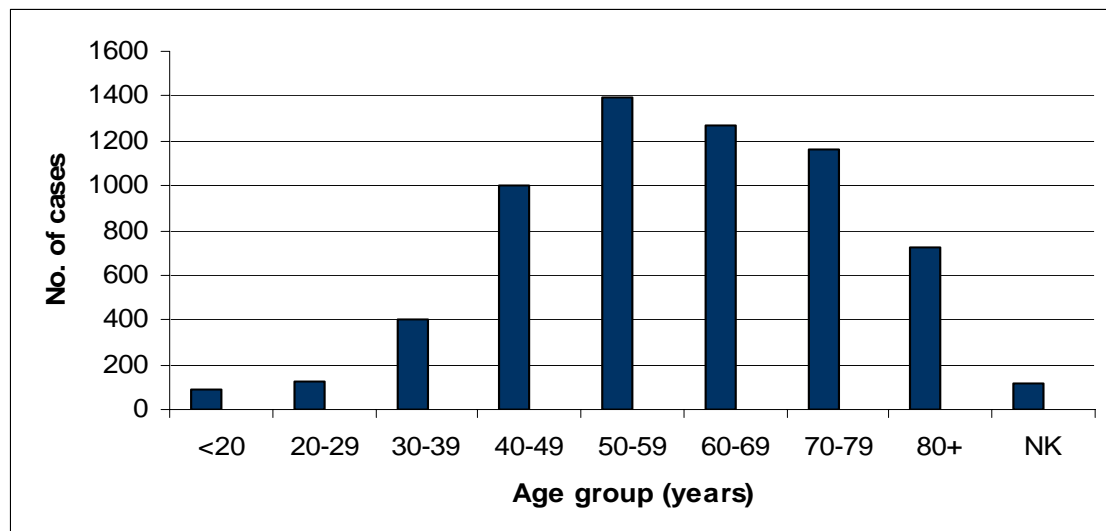


Figure 3. The number of legionnaires' disease cases in each age group in Europe, 2006

The majority of cases were community-acquired (58.7%), 21.4% were travel-associated, 4.9% were nosocomial, 1.5% other, and 13.5% unspecified. The cases were classified as confirmed in 89.5% of cases, 9.0% were presumptive and 1.5% were unknown. The main method of diagnosis was by urinary antigen (80.2%), culture (8.6%), serology (9.6%), other (0.1%), and unknown (1.6%).

Under-diagnosis and under-reporting are thought to lead to a significant under-estimation of incidence of legionnaires' disease in many countries. The causes include:

- Pneumonia being treated with antibiotics which cover *Legionella* and patients recovering without the need to establish the cause of pneumonia.
- Lack of sensitivity and specificity of diagnostic methods e.g. serology.
- Cases not being notified.

Denmark has consistently had a higher rate of infection (around 20/million population) than most other countries. The factors probably associated with this are that it is a small country which carries out high levels of testing for *Legionella* in patients with pneumonia and it has a centralised reference laboratory for diagnosing and reporting cases. In recent years, the European Working Group for Legionella Infection (EWGLI) has adopted the rate of 20/million population as the 'gold standard' for countries to reach in order to reflect a truer incidence of infection.

Ireland has a low rate of legionnaires' disease compared with many European countries and the rate falls well short of the 'gold standard' as set by EWGLI. This could suggest that a major degree of under-diagnosis and under-reporting currently exists in Ireland. It is critical to the control of legionnaires' disease that enhanced surveillance is maintained at a high level. Significantly, it has been reported that delay of appropriate therapy results in poor outcome.<sup>3</sup> A rapid urine antigen test is available in Ireland. Consideration should be given for the more widespread use of this test when a patient presents with pneumonia. The importance of specimens for culture should also be considered.

## References

1. Department of Health and Children. Infectious Diseases (Amendment) (No.3) Regulations 2003, S.I. No. 707 of 2003. Available at [www.ndsc.ie/hpsc/NotifiableDiseases/NotificationLegislationandProcess/](http://www.ndsc.ie/hpsc/NotifiableDiseases/NotificationLegislationandProcess/).
2. EWGLI. Legionnaires' disease, Europe, 2006.
3. Heath CH, Grive DI, Looke DF. Delay in appropriate therapy of Legionella pneumonia associated with increased mortality. *Eur J Clin Microbiol Infect Dis* 1996; **15**: 286-90.

