

## 7. Legionellosis

### Surveillance objectives

The objectives of legionellosis surveillance are to:

- Monitor the epidemiology of legionellosis in terms of time, person and place;
- Detect and investigate outbreaks to identify settings where others may have been exposed and implement appropriate interventions to minimise the risk of further transmission;
- Communicate the risks of legionellosis to those likely to have been exposed to implicated settings, and; the patterns and trends about legionellosis to the public, government and other key stakeholders;
- Inform the development of prevention strategies.

### Summary of notifications

There were 65 confirmed and four probable cases of legionellosis notified to the department in 2006, a slight increase on the 60 confirmed and four probable cases notified in 2005. There were twice as many male cases (n=46) than female cases (n=23). Cases were aged from 19 to 85 years with a median age of 62 years; 75 per cent of the cases were aged 55 years or older. Although the highest number of cases was in the 60–64 years age group, the age specific notification rate was for those aged 75–79 years (figure 24).

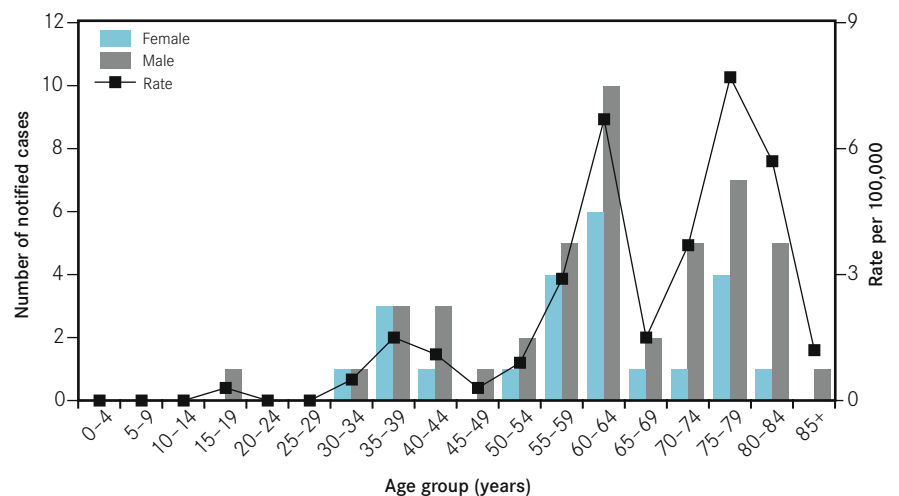
With the exception of one case who was a resident of the Hume Region, all cases were residents of metropolitan regions (figure 25). The highest number of cases and notification rates were in North and West Metropolitan Region and Southern Metropolitan Region.

There were three cases for which the suspected exposure was in a different region to their residence: two residents of Eastern Metropolitan Region were thought to be exposed in North and West Metropolitan Region and one resident of Southern Metropolitan Region was thought to be exposed in Eastern Metropolitan Region.

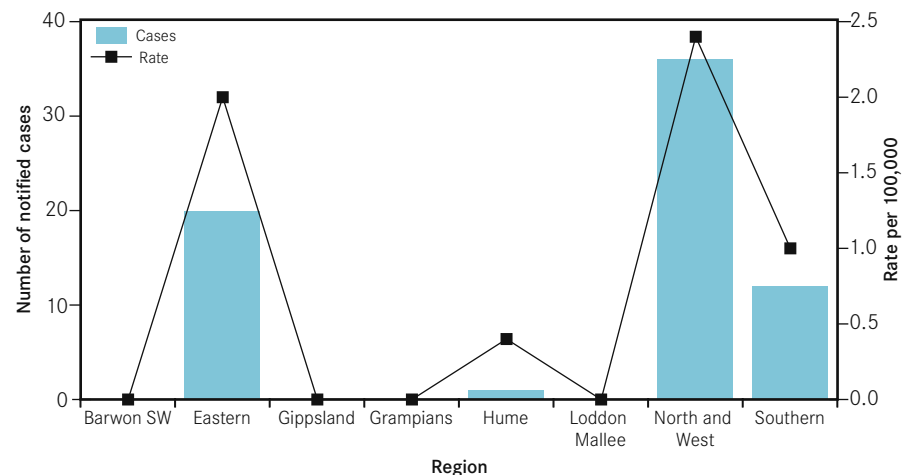
Two-thirds of the notified legionellosis cases in 2006 were due to infection with *Legionella pneumophila* serogroup 1

with a further 19 per cent due to *L. longbeachae* (table 16). All but one of the *L. pneumophila* serogroup 1 cases were diagnosed by detection of urinary antigen. Serology was the next most frequent diagnostic method for 29 cases (42 per cent); 12 of the 13 *L. longbeachae* cases were diagnosed by serology. Culture and PCR were used in the diagnosis of eight and five cases respectively. Multiple diagnostic methods were used for 16 cases.

**Figure 24: Notified cases and notification rates of legionellosis by age group and sex, Victoria, 2006**



**Figure 25: Notified cases and notification rates of legionellosis by region, Victoria, 2006**



Two cases (three per cent) aged 59 and 85 years died as a result of their *Legionella* infections; both were *L. pneumophila* serogroup 1.

### Risk factors

Data on employment/occupational status were available for all cases. Retirees or pensioners comprised 45 per cent of cases, with those working in the office/sales/retail sector accounting for a slight majority among cases that were employed (table 17). Additional risk factor data were collected for 68 cases (99 per cent). There were 42 cases (62 per cent) for whom a chronic medical condition was reported (15 of these were also reported to be immunosuppressed) and 19 (28 per cent) reported being smokers. There were eight cases (12 per cent) who reported heavy alcohol consumption and a further 12 cases (18 per cent) with moderate consumption. Six of the 13 *L. longbeachae* cases (including one of the horticulture workers) reported gardening or use of potting mixes during the incubation period.

### Outbreak investigations

Eighteen of the 46 *L. pneumophila* serogroup 1 infections in 2006 were

**Table 16: Notified cases of legionellosis by species/serogroup, Victoria, 2006**

<i>Legionella</i> species/serogroup	Cases (per cent)
<i>L. pneumophila</i> serogroup 1	46 (67)
<i>L. pneumophila</i> other	5 (7)
<i>L. longbeachae</i>	13 (19)
<i>L. micdadei</i>	3 (4)
<i>Legionella</i> not otherwise specified	2 (3)
<b>Total</b>	<b>69 (100)</b>

part of one outbreak and three cluster investigations; all occurred in the first quarter. The outbreak investigation commenced in late February after routine follow-up of four notified cases of legionellosis revealed that each case had been to a specific area in the suburb of Preston during their respective incubation periods. In total, 11 cases were identified as part of the outbreak with illness onset dates between 12 February and 11 March. There were nine males and two females with an age range of 43 to 85 years (median=80 years); one case died as a result of his infection. A total of 31 cooling tower systems in the area were inspected and disinfected; one cooling tower system was positive for *L. pneumophila* serogroup 1. Molecular subtyping of an isolate from the implicated cooling tower revealed a pulsed-field gel electrophoresis pattern and monoclonal antibody type designated as indistinguishable from that of the sputum isolate from one of the cases; no *Legionella* was able to be cultured from the other ten cases.

**Table 17: Notified cases of legionellosis by occupation, Victoria, 2006**

Occupation	Cases (per cent)
Retiree/pensioner	31 (45)
Office/sales/retail worker	11 (16)
Tradesperson/process worker	10 (14)
Driver	4 (6)
Health care worker	4 (6)
Home duties	3 (4)
Horticulture worker	2 (3)
Animal breeder	1 (1)
Cleaner	1 (1)
Security worker	1 (1)
Unemployed	1 (1)
<b>Total</b>	<b>69 (100)</b>

The outbreak investigation is described in issue 4, volume 9 of the *Victorian Infectious Diseases Bulletin*.

The three cluster investigations involved two cases linked to a hospital, two cases linked to a suburban street and three cases linked to a tertiary institution. Despite sampling of cooling tower systems, warm water systems and water features in the vicinities of the hospital and tertiary institution, no *L. pneumophila* serogroup 1 were isolated. There were no cooling tower systems near the implicated suburban street.

### Comment

Since the introduction of the Health (Legionella) Regulations 2001, the numbers of annually notified cases of legionellosis have steadily declined from a peak of 121, although they have remained steady in the last two years. Surveillance data continue to show increasing age as the most significant risk factor associated with legionellosis.

Positive *Legionella* antibody results are common in healthy adult populations but are not necessarily indicative of acute infections; acute infection needs to be confirmed by parallel testing of convalescent serum three to six weeks after the onset of symptoms. Medical practitioners considering legionellosis in the differential diagnosis are also advised to undertake *Legionella* urinary antigen testing, which is rapid and sensitive. Collection of sputum samples for culture is important in epidemiological investigations, even if urinary antigen and serology testing results are positive, as molecular subtyping can be used to compare patient and environmental isolates and potentially identify epidemiological links.