

Progress in the surveillance and control of *Legionella* infection in France, 1998 - 2008

N° 80

C. Campese¹, C. Maine¹, S. Jarraud², D. Che¹
 1/ French Institute for Public Health Surveillance, Saint-Maurice, France
 2/ Centre national de référence, Lyon, France

Background

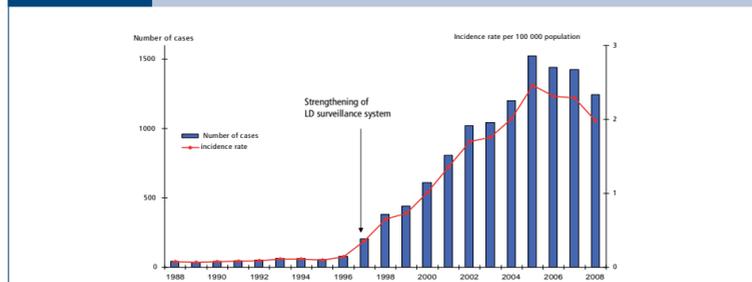
- In France, the notification of Legionnaire's disease (LD) cases is mandatory since 1987.
- Following a capture-recapture study in 1995 showing an estimated sensitivity of about 10%, the surveillance system was strengthened in 1997. The estimated sensitivity was 33% in 1998 [1].
- In 1997, the urinary antigen detection test was introduced and a guideline for the prevention and the control of the disease was implemented.
- Our study describes the trend of LD in France from 1998 to 2008.

Method

- Case definitions
 Patient who presented with pneumonia and one of the following laboratory results
 - a confirmed case
 - . isolation of *Legionella*
 - . or/and detection of *Legionella pneumophila* antigen in urine
 - . or/and a fourfold rise in antibody titre to *Legionella*
 - a presumptive case
 - . a single high titre in antibody to *Legionella*
- An outbreak was defined as the occurrence of at least 10 cases of LD linked in terms of time and place.
- Clinical isolates are genotyped by pulsed-field gel electrophoresis (PFGE) and classified into 4 categories:
 - sporadic: isolate with non-previously identified genotype
 - epidemic: isolate with genotype specific to an outbreak
 - endemic: isolate with previously observed genotype and responsible for at least 30 epidemiologically unrelated cases (Paris ST1; Lorraine ST47; Louisa ST23; Biarritz ST40; Mondial ST107) [2].
 - others: isolate with genotype previously identified but non-endemic.

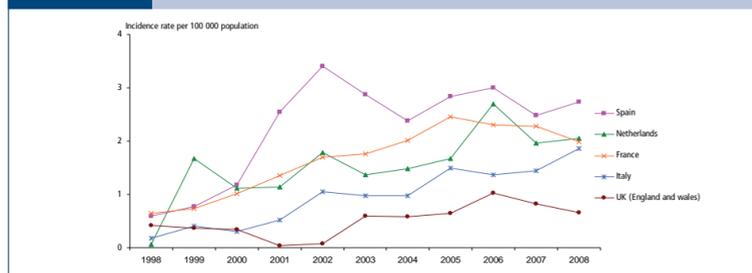
Results

FIGURE 1 INCIDENCE RATE AND NUMBER OF LD CASES IN FRANCE 1988-2008



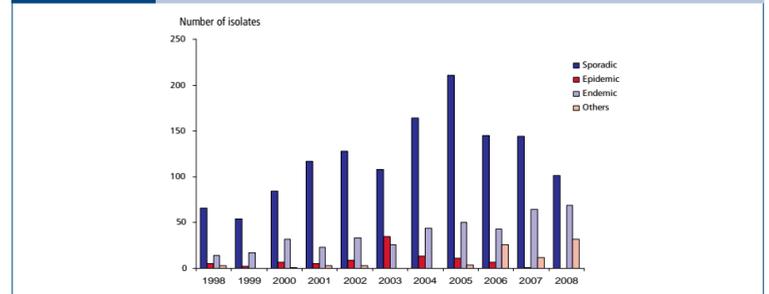
- From 1998 to 2008 a total of 11 147 cases were reported. The majority (10 381=93%) was confirmed cases.
- Between 1998 and 2005 the incidence of LD increased gradually, by an average of 20% per year, reaching 2.5/10⁵ in 2005 and then slightly decreased (2.0/10⁵) in 2008.
- From 1998 to 2008, the incidence of LD in 5 countries in Europe increased gradually and in the recent years seems to be more stable.

FIGURE 2 INCIDENCE RATE AND NUMBER OF LD CASES IN 5 COUNTRIES IN EUROPE 1998-2008



- In France:
- The median age of cases was 60 years [range 0-103]
 - The Male/Female sex ratio was 2.9
 - 7834 (70%) patients presented at least one risk factor for contracting LD:
 - tobacco smoking was the leading risk factor reported in 6396 (57%) cases.
 - cancer in 1123 (10%), immunosuppressive conditions in 1068 (10%), diabetes in 1433 (13%), other risk factors including chronic respiratory and cardiac diseases, alcoholism and HIV infection in 2181 (20%).
 - The median delay between date of onset and notification has decreased over the period from 28 days in 1998 to less than 7 days in recent years
 - The outcome was known for 83% of cases and the case fatality rate (CFR) was 13% over the period. CFR decreased from 22% in 1998 to 11% in 2008 (p<10⁻⁶).
 - During this 10-year period, the majority of cases was diagnosed by urinary antigen test (UAg) (from 39% in 1998 to 95% in 2008 [p<10⁻⁶])
 - The majority of cases (9850=88%) is due to Lp1.
 - An isolate was available for 1983 (18%) cases.
 - The national reference centre analysed 1916 Lp1 isolates. The proportion of previously identified strains (endemic and others) has increased in recent years.

FIGURE 3 DISTRIBUTION OF ISOLATES OF LD CASES IN FRANCE 1998-2008



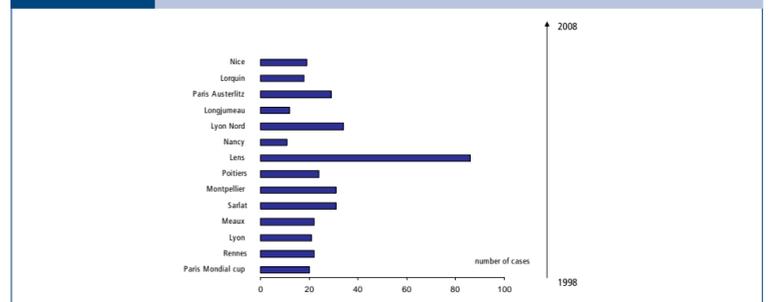
- Nine percent were considered as potentially hospital-acquired infections, this percentage decreased over the 10-year period from 21% in 1998 to 7% in 2008 (p<10⁻⁶).
- From 1998 to 2008, an exposure during travel was suspected for 17% of cases.

FIGURE 4 EVOLUTION OF THE EXPOSURE OF LD CASES IN FRANCE 1998-2008

Percentage (%)	1998 (n = 381)	1999 (n = 440)	2000 (n = 610)	2001 (n = 807)	2002 (n = 1021)	2003 (n = 1004)	2004 (n = 1202)	2005 (n = 1527)	2006 (n = 1443)	2007 (n = 1428)	2008 (n = 1244)
Hospital-acquired	21	17	20	13	10	9	6	7	6	7	7
Elderly home acquired				2	3	4	5	5	4	4	5
Travel associated	16	15	12	17	17	17	18	17	18	17	20
Community-acquired confirmed and assumed	63	68	68	70	73	74	76	76	76	76	73

- Between 1998 and 2007, 14 outbreaks were identified, corresponding to 380 (3.8%) notified cases. A single outbreak was identified in 2007 and none in 2008.
- The median number of cases per outbreak was 22 [range 11-86] and more than 40 cases were reported in only one outbreak (Lens 2003-2004) [3].
- Cooling towers were the most probable source of infection (confirmed in 8 outbreaks and suspected in 5); for one outbreak a spa was suspected [4].

FIGURE 5 NUMBER OF CASES IN EACH LD OUTBREAK IN FRANCE 1998-2008



Discussion

- The surveillance and control systems for LD in France continue to evolve on a regular basis.
- Several indicators such as notification delay and case fatality rate have improved over the 10-year period. In addition, no outbreak was identified during the last 2 years.
- Extensive media coverage of outbreaks may also have improved the sensitivity of the surveillance system by increasing awareness of the practitioners.
- Despite the availability of a rapid diagnostic test (UAg), the percentage of number of clinical strains doesn't decrease.
- The large collection of clinical isolates could contribute to improving our knowledge about the bacteria and the disease.
- The proportion of hospital-acquired cases has decreased but the proportion of travel associated cases is stable.
- Efforts are still required to limit the number of travel associated cases : information and prevention measures need to be encouraged.
- Cooling towers were identified or suspected as the source of contamination for the majority of outbreaks, contributing to improving regulations.
- Following the increased number of cases and outbreaks, new legislations were introduced : <http://www.sante.fr/>
 - Surveillance and control of cooling towers in hospitals (2003)
 - Surveillance and control of all cooling towers (2004)
 - Investigation and surveillance guidelines (2005)
 - Surveillance of LD in homes for elderly people (2005)
 - Organisation of the response to outbreaks (2006)

Conclusion

- The reinforced surveillance system for LD has enabled a more rapid detection and investigation of cases by improving sensitivity, and a more rapid implementation of control measures.
- From now on, the challenges of our evolving legislation are to improve the prevention by limiting the exposures.

References

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