

## Characteristics of the most important outbreaks of legionnaire's disease in France from 1998 to 2007

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In France, the notification of Legionnaire's disease (LD) cases is mandatory since 1987. Following a study showing under-reporting, the surveillance system was strengthened in 1997. Between 1998 and 2007, 9935 cases were notified but few outbreaks occurred. Our study describes the characteristics of these outbreaks.

An outbreak was defined as the occurrence of more than 10 cases of LD linked in terms of time and place. The characteristics of the outbreak cases were compared to national data for the same period.

Between 1998 and 2007, 14 outbreaks were identified, corresponding to 380 (3.8%) notified cases. Twelve outbreaks were detected by the local authorities, one detected by the Ewgli network and one by the National reference centre for *Legionella* (NRC). Fourteen cases from 3 outbreaks were reported by Ewgli. Outbreaks were located across France. The median number of cases in outbreaks was 22 [range 11-86], more than 40 cases were reported in one outbreak (Lens). The duration of outbreaks was less than 20 days for 4. For another 4 it was more than 50 days. Twelve (86%) took place between May and September. In 13 of the 14 outbreaks, human and environmental strains were compared by PFGE typing by the NRC. For 8 outbreaks, a cooling tower was identified as the source of the contamination and for 5, cooling towers were suspected. In one, a spa was suspected as the source of infection.

Among the 380 cases, 95% were confirmed cases of LD, 87% were detected by urinary antigen and for 22%, an isolate was available (17.8% national data) The M/F sex ratio was 2.5 [1.2-19.0]. The median age of cases was 63 years [range 51-81]. The proportion of cases with documented risk factors was higher in outbreaks (76%) than in the national data (68%). Five percent of cases were not hospitalized, particularly 21% in Lyon-outbreak in 2005. The outbreak case fatality rate was 12.6% (13.7% national data) and no patients died in 4 outbreaks.

During the last 10 years, few cases were related to outbreaks. Only one outbreak, Lens, had more than 40 cases. The reinforced surveillances system for LD has enabled more rapid detection and investigation of outbreaks. Characteristics of outbreak cases are mainly similar to the national data. The availability of clinical isolates contributed to the identification of the outbreak sources. Cooling towers were the most probable source of the majority of outbreaks, which emphasizes the need to strengthen regulations in order to better control the dispersion of *Legionella* from these sources.