

Legionnaires' disease in France: sensitivity of the mandatory notification has improved over the last decade.

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The notification rate of Legionnaires' disease (LD) in France was $2.4/10^5$ population in 2010 varying across region from $0.6/10^5$ to $6.4/10^5$. Higher notification rates were observed in the eastern part of the country with a clear west-east gradient. A capture –recapture study was conducted to estimate the number of confirmed cases of LD diagnosed in France in 2010 and thus the sensitivity of the Mandatory Notification (MN) system in France and in each region.

Two data sources were the MN system and a survey of hospital laboratories ($n=366$), for all confirmed cases with diagnosis and onset of symptoms in 2010. A confirmed case was defined as a patient presenting clinical and/or radiological signs of pneumonia associated with at least one of the following laboratory criteria: isolation of Legionella species or positive urinary antigen test.

Estimates of the number of cases have been calculated by using the statistical method of Chapman. To estimate the total number of confirmed cases in France and by region in 2010, the sensitivity was applied to the number of cases notified through the MN.

The majority ($343/366 = 94\%$) of laboratories participated into the study. The sensitivity of the MN was estimated at 88.5% [95% IC: 88.0 to 89.0] and varied by region, from 70% to 100%. The estimated number of confirmed cases of LD in 2010 was 1661 [1621-1700]. The adjusted incidence was 2.7 cases / 10^5 . The west-east gradient persisted taking into account the sensitivity of the MN by region.

This study documents the substantial improvement in the sensitivity of the MN (88.5% *versus* 33% in 1998) and shows that the observed incidence gradient is not related to regional disparities in sensitivity. Other additional studies, particularly ecological, have to be conducted to better understand the observed spatial variations.