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Determinants of Daily Attendances in Emergency Departments for Asthma in the Paris Area

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Objective

Description of the temporal pattern of the daily number of attendances in emergency departments (ED) for asthma in Paris area and identification of the main factors influencing this indicator.

Introduction

In June 2004, the French syndromic surveillance system based on the ED has been implemented by the French institute for public health surveillance (InVS), starting with 23 ED. In August 2014, about 600 ED (40,000 daily attendances) are included in the Oscour network, recording 80% of the national total attendances.

Asthma is one of the about 60 syndromic indicators monitored each day and followed all over the year.

This indicator presents important fluctuations and can be influenced by several environmental and infectious but also societal factors. Particularly factors like air pollution are known to have both short and long term impact on asthma while thunderstorms are associated with acute outbreaks of asthma [1-4].

Methods

Using the daily attendances with a clinical diagnosis of asthma (J45 and J46 ICD10 codes) recorded in 39 emergency departments of the Paris area from 2006 to 2014, the pattern of asthma has been described. The intrinsic effects (day-of-week, seasonal period, holidays) and external factors have been explored by age group.

Results

In 2014, about 54 attendances for a diagnosis of asthma are daily recorded in the ED of Paris region, representing 1.03% of all attendances of this region. The part of asthma attendances is higher for children under 15 years old than in adults (2.14% versus 0.59%).

While the temporal pattern of the daily number of attendances for asthma is quite stable in the adults, the fluctuations of the attendances in children present major variations depending on the period of the year: a high increase is more particularly observed each September at the beginning of the school year (Figure 1).

In 2014 two outbreaks in asthma attendances have been observed (Figure 1). The first one occurred in March, between the 13th March and the 12th April. During this period, a significant air pollution episode was observed between the 6th and the 1st April and affected mainly the Ile-de-France region. An intense second episode was noticed from 19th to 20th of July, concomitant with a thunderstorm episode occurring the same days.

Conclusions

Syndromic surveillance constitutes the only routine system for surveillance of asthma at the population scale, enabling the early detection of outbreaks like those observed in 2014.

Moreover, this system is included in the national surveillance program of short and long term effects of air pollution, with the objective to detect and follow-up the rapid impact of major air pollution episodes in a near real time.

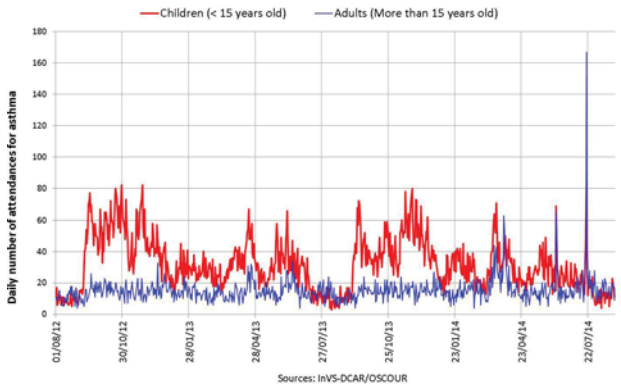

Figure 1: Daily number of attendances for asthma in the emergency departments of Paris area from August 2012 to August 2014 by age group

Keywords

Asthma attendances; Emergency department; France; Influencing factor

Acknowledgments

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References

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