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National Health Insurance: a new application for nonspecific surveillance in Réunion Island

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Objective

To assess the ability to detect an unusual health event from National Health Insurance data.

Introduction

In Réunion Island, the nonspecific surveillance was mainly developed during A(H1N1) influenza pandemic in 2009 (1, 2). In March 2010, a new surveillance system was implemented from National Health Insurance data. This monitoring was based on the weekly consultation number and home visits by general practitioners.

Methods

The data based on the activity of general practitioners were transmitted on week W and covered the consultations and home visits carried out by the general practitioners in the week W − 1. These data were updated week by week according to the flow of repayments. The data received were aggregated, and no personal information was communicated.

The thresholds corresponding to the statistical alarms for the weekly numbers of all consultations were based on a calculation using adapted versions of two historical methods (log-linear regression model of Farrington and historical limit method) and CUSUM methods.

The surveillance period was spread over 134 weeks from week 1 of 2009 to week 29 of 2011. For the two historical methods, expected numbers of all consultations were calculated during these 134 weeks, using a training period of at least 3 years. A 95% confidence interval was calculated for each weekly expected number. A weekly count observed was considered significantly greater than the expected value if it was above the 95% upper confidence limit.

For the CUSUM methods, only few weeks were necessary to calculate a one-sided positive cumulative sum. An alarm was obtained if this cumulative sum was greater than a fixed decision value.

Results

The data covered 72% of the population of Réunion Island. Over the surveillance period, 11,048,739 consultations were recorded with an average of 82,453 consultations per week (min: 56,682; max: 120,432). An illustration of the results obtained with the historical limit method is presented in Fig. 1. The first alarms that occurred on week 34 to week 36 of 2009 corresponded to the influenza A(H1N1) epidemic with a peak in week 35. Statistical alarms observed on week 8 of 2010, and week 7 to 9 of 2011 were related to the season circulation of respiratory syncytial virus. These results were confirmed by the laboratory data. During the austral winter of 2010, one alarm was obtained in week 39 corresponding to the influenza epidemic.

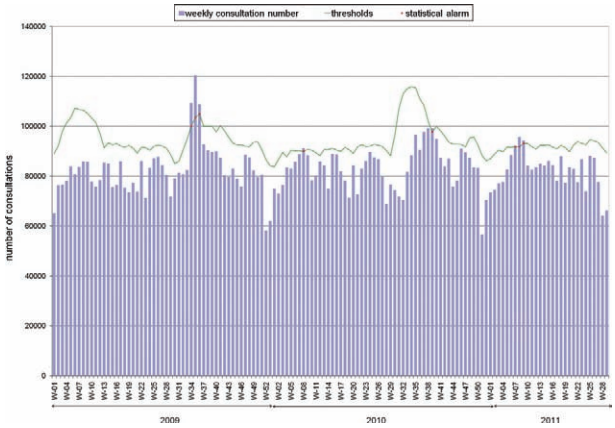

Fig. 1. Application of the historical limit method on National Health Insurance data, Réunion Island, 2009-2011.jpg.

Conclusions

This surveillance system based on the data of the National Health Insurance is a complementary tool to nonspecific monitoring in Reunion Island. Not only does it ensure the detection of unusual health events but it also allows to quantify a public health impact for major events. It brings information about the recourse to the so-called 'non emergency' cares that will allow public health authorities to implement adapted control measures. The major advantage of this system is its exhaustive data use that ensures a global view on all consultations carried out in the island and to have a denominator to calculate other indicators.

Keywords

National Health Insurance; nonspecific surveillance; Réunion Island

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